

### 3.19 Test Excavation 33 (T-033)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-009 [Plat]
<b>Elevation Above Sea Level:</b>	6.9 m
<b>UTM:</b>	615993.28 mE, 2358928.36 mN
<b>Max Length/Width/Depth:</b>	3.1 m / 0.92 m / 1.2 mbs
<b>Orientation:</b>	312 / 132° TN
<b>Targeted Project Component:</b>	Station Column
<b>USDA Soil Designation :</b>	Ewa silty clay loam (EmA)

**Setting:** Test excavation 33 (T-033) was located within the left-hand, eastbound turn lane of Dillingham Boulevard, approximately 40 m northwest of the Mokauea Street intersection. T-033 was located on public property owned by the City and County of Honolulu. Two waterlines (3.8 m southwest and 4.3 m southeast) and one AT&T line (2.8 m northeast) were located near T-033. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 map of Kalihi and Kapālama depicted T-033 within LCA 6450:1. LCA 6450:1 or the *'ili of Mokauea* (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. M. D. Monsarrat's 1897 map showed T-033 was located southeast of a rice plantation. The 1919, 1933, and 1943 U.S. Army War Department Fire Control maps indicated that between 1919 and 1943 the region that surrounded T-033 was developed heavily with increased street grids and structures. The 1953 U.S. Army Mapping Service topographic map showed that the formal Kalihi and Kapālama area had developed to its present configuration by this time.

No previous archaeology was conducted within the vicinity of T-033.

**Documentation Limitations:** T-033 was excavated to the coral shelf at 1.2 mbs. There were no factors that limited the documentation of T-033.

**Stratigraphic Summary:** The stratigraphy of T-033 consisted of fill strata overlying natural sediment to the coral shelf. Observed strata included asphalt (Ia) very gravelly loam base course (Ib) and silty clay (II) to the coral shelf (III). The stratigraphy generally conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifact Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature however no utility was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth except for the linear feature. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-033 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.45 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.8 mbs.

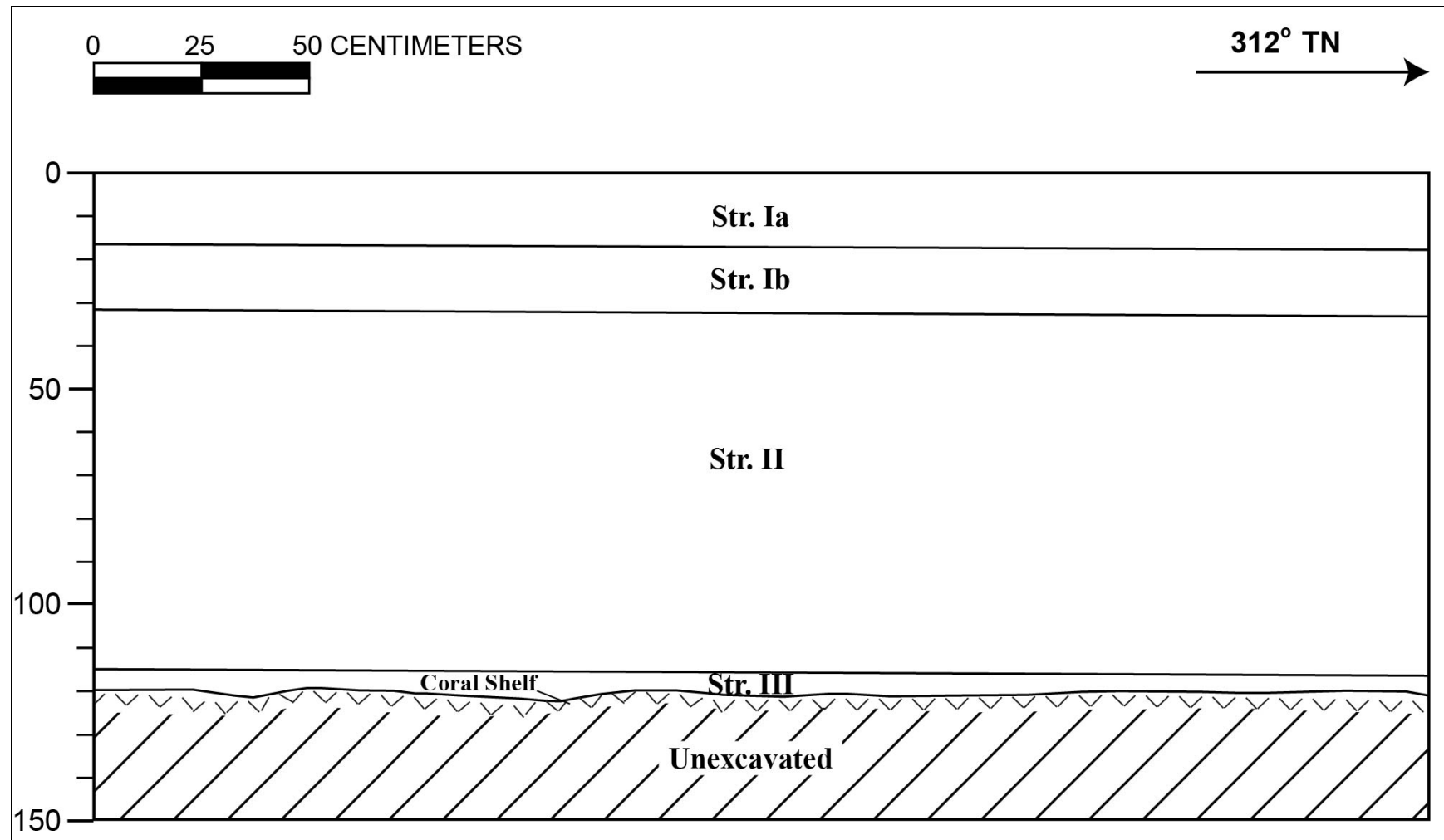
**Summary:** T-033 was excavated to the coral shelf at 1.2 mbs. The stratigraphy of T-033 consisted of fill strata (Ia–Ic) overlying natural sediment (II–III) to the coral shelf. The stratigraphy generally conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). No archaeological cultural resources were identified within T-033.



T-033 general location, view to southeast



T-033 north profile wall



T-033 north wall profile

## T-033 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–16	Asphalt
Ib	16–31	Fill; 10 YR 5/3 (brown); very gravelly loam; structureless, single-grain; dry, slightly hard consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; basalt and crushed coral base course
II	31–115	Natural; 5 YR 3/3 (dark reddish brown); silty clay; moderate, medium, blocky structure; moist, friable consistency; non-plastic; terrigenous origin; very abrupt, smooth lower boundary; natural sediment, no A-Horizon, likely graded
III	115–120	Natural; 10 YR 7/4 (very pale brown); coral shelf; structureless, massive; moist, indurated consistency; non-plastic; marine origin; lower boundary not visible

### 3.20 Test Excavation 34 (T-034)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-010:068
<b>Elevation Above Sea Level:</b>	7.2 m
<b>UTM:</b>	616029.86 mE, 2358940.56 mN
<b>Max Length/Width/Depth:</b>	3.63 m / 0.91 m / 1.53 mbs
<b>Orientation:</b>	320 / 140° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 34 (T-034) was located 30 m northeast of the Dillingham Boulevard and Mokauea Street intersection within the 7-Eleven convenience store building. T-034 was located on private property. No utilities were indicated near T-034. The dimensions of T-034 were adjusted from a planned 6.0 m by 0.6 m to 3.0 m by 0.9 m in order to fit the station footprint as well as avoid damaging the existing building. The surface area was slightly elevated, 0.14 m above the outside parking lot surface.

**Summary of Background Research and Land Use:** Brown's 1883 map of Kalihi and Kapālama depicted T-034 within LCA 6450:1. LCA 6450:1 or the *'ili of Mokauea* (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. M. D. Monsarrat's 1897 map showed that T-034 was located within the southern boundary of a rice plantation. The 1919, 1933, and 1943 U.S. Army War Department Fire Control maps indicated that between 1919 and 1943 the region that surrounded T-034 was developed heavily with increased street grids and structures. The 1953 U.S. Army Mapping Service topographic map showed that the formal Kalihi and Kapālama had developed to its present configuration by this time.

No previous archaeology was conducted within the vicinity of T-034.

**Documentation Limitations:** T-034 was excavated to the coral shelf at 1.53 mbs. There were no factors that limited the documentation of T-034.

**Stratigraphic Summary:** The stratigraphy of T-034 consisted of fill strata overlying natural sediment to the coral shelf. Observed strata included concrete (Ia) and gravelly silty clay loam fill with faunal and ceramic inclusions (Ib) overlying natural silty clay loam (II) to the coral shelf (III). Stratum II contained minimal charcoal flecking and was a well sorted alluvium with no large gravel or coral pieces. The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** One artifact, a ceramic flowerpot fragment (Acc. #034-A-1), was collected from Stratum Ib between 0.7 and 0.83 mbs. This artifact was consistent with fill for development and related disturbance.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** Terrestrial faunal remains were collected individually during excavation. Faunal remains collected from Ib (0.7 0.83 mbs), near the northwest end of T-034, included *Bos Taurus* femur diaphysis, (2) ribs, scapula (possible), and vertebra. The faunal remains collected from Stratum Ib were butchered fragments consistent with food remnants.

**Sample Results:** One bulk sample was collected from Stratum II between 0.79 and 1.04 mbs (5.0 L). Three column samples were collected from Stratum II between 0.80 and 0.82, 1.07 and 1.09, and 1.44 and 1.16 mbs. No material was collected from the wet-screened and sorted bulk sample, and the column samples were not submitted for sample analyses.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features although a dead PVC pipe was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-034 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.3 mbs. No utilities were observed in the profile although a dead PVC pipe was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

**Summary:** T-034 was excavated to the coral shelf at 1.53 mbs. The stratigraphy of T-034 consisted of fill strata (Ia–Ib) overlying natural sediment (II) to the coral shelf (III). The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). A single artifact collected from Stratum Ib (fill) was consistent with fill for development and related disturbance. The faunal remains collected were consistent with food remnants. The results of T-034 are consistent with the historic land use.



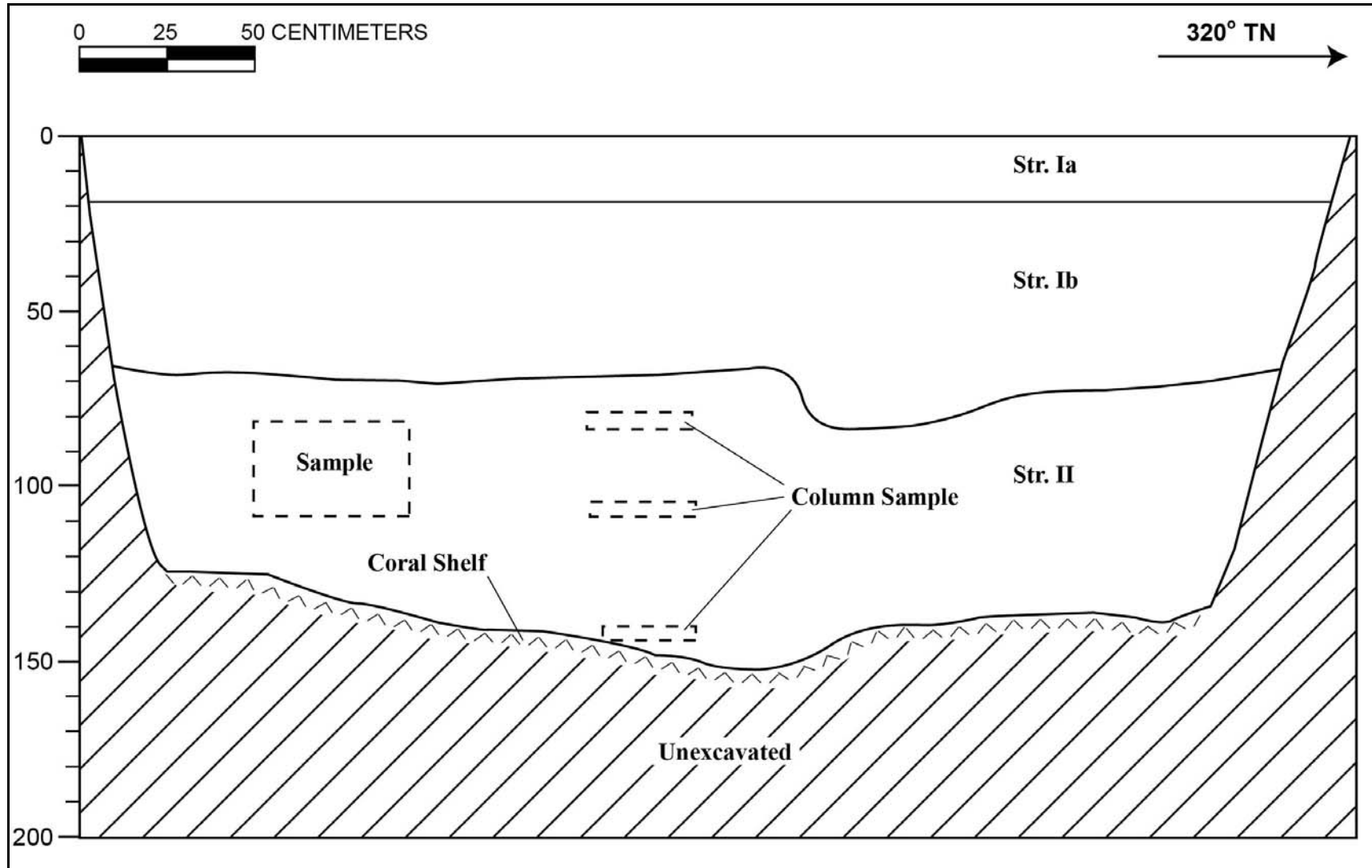


T-034 general location, view to north, inside the 7/11 convenience store



T-034 southwest profile wall





T-034 southwest wall profile

## T-034 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–19	Concrete/floor surface
Ib	17–83	Fill; 7.5 YR 3/4 (dark brown); gravelly silty clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; contained cut faunal bone and ceramic fragments; fill with reworked natural alluvium, coral and basalt inclusions
II	66–153 BOE	Natural; 5 YR 3/4 (dark reddish brown); silty clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; lower boundary not visible



T-034 ceramic flowerpot fragment (Acc. #034-A-1)

### 3.21 Test Excavation 35 (T-035)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-009:001
<b>Elevation Above Sea Level:</b>	7.1 m
<b>UTM:</b>	615979.80 mE, 2358910.63 mN
<b>Max Length/Width/Depth:</b>	6.1 m / 0.70 m / 1.40 mbs
<b>Orientation:</b>	310 / 130° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 35 (T-035) was located within the paved parking lot of the abandoned Dillingham Café on the west side of the Dillingham and Mokauea Street intersection. T-035 was located on private property. T-035 was not located near any existing utilities. The land surface in the parking lot was slightly elevated.

**Summary of Background Research and Land Use:** Brown's 1883 map of Kalihi and Kapālama depicted T-035 within LCA 6450:1. LCA 6450:1 or the 'ili of Mokauea (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. M. D. Monsarrat's 1897 map showed T-035 was located south of a rice plantation. The 1919, 1933, and 1943 U.S. Army War Department Fire Control maps indicated that between 1919 and 1943 the region surrounding T-035 was developed heavily with increased street grids and structures. The 1953 U.S. Army Mapping Service topographic map showed that the formal Kalihi and Kapālama area had developed to its present configuration by this time.

No previous archaeology was conducted within the vicinity of T-035.

**Documentation Limitations:** T-035 was excavated to the coral shelf at 1.40 mbs. A buried concrete slab at 0.32 mbs was present throughout the entire length of the excavation and initially prevented further excavation. The concrete slab was subsequently removed and T-032 was fully excavated.

**Stratigraphic Summary:** The stratigraphy of T-035 consisted of fill strata overlying natural sediments to the coral shelf. Observed strata included asphalt (Ia), very gravelly loam base course (Ib), silty clay (Ic), and concrete slab (Id) overlying natural silty clay loam (IIa) and silty sandy loam (IIb) to the coral shelf. Strata IIa and IIb were natural alluvium sediments. Stratum Id, a concrete slab, was a modern buried surface younger than 50 years old and was not considered a cultural resource. Stratum IIa contained a concentration of water rounded basalt cobbles in the northwestern end. At the upper boundary of Stratum IIa a dressed basalt stone (labeled Blue Basalt on profile below) was observed at 0.4 mbs. The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifact Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** Two bulk sediment samples were collected of Strata IIa and IIb. The samples were wet-screened and no cultural material was recovered.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features that might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-035 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.25 mbs. An anomaly was observed in the profile and could correspond to the basalt cobbles encountered during excavation. The maximum depth of clean signal return was approximately 0.75 mbs.

**Summary:** T-035 was excavated to the coral shelf at 1.40 mbs. The stratigraphy of T-035 consisted of fill strata (Ia–Id) overlying natural sediments (Strata IIa–IIb) to the coral shelf. Stratum Id, a buried concrete slab, was a modern buried surface less than 50 years old and was not considered a cultural resource. The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). The upper portion of Stratum IIa was slightly disturbed, likely related to the urban development and construction of residential neighborhoods in Kalihi from 1919 to 1940s. No archaeological cultural resources were observed.

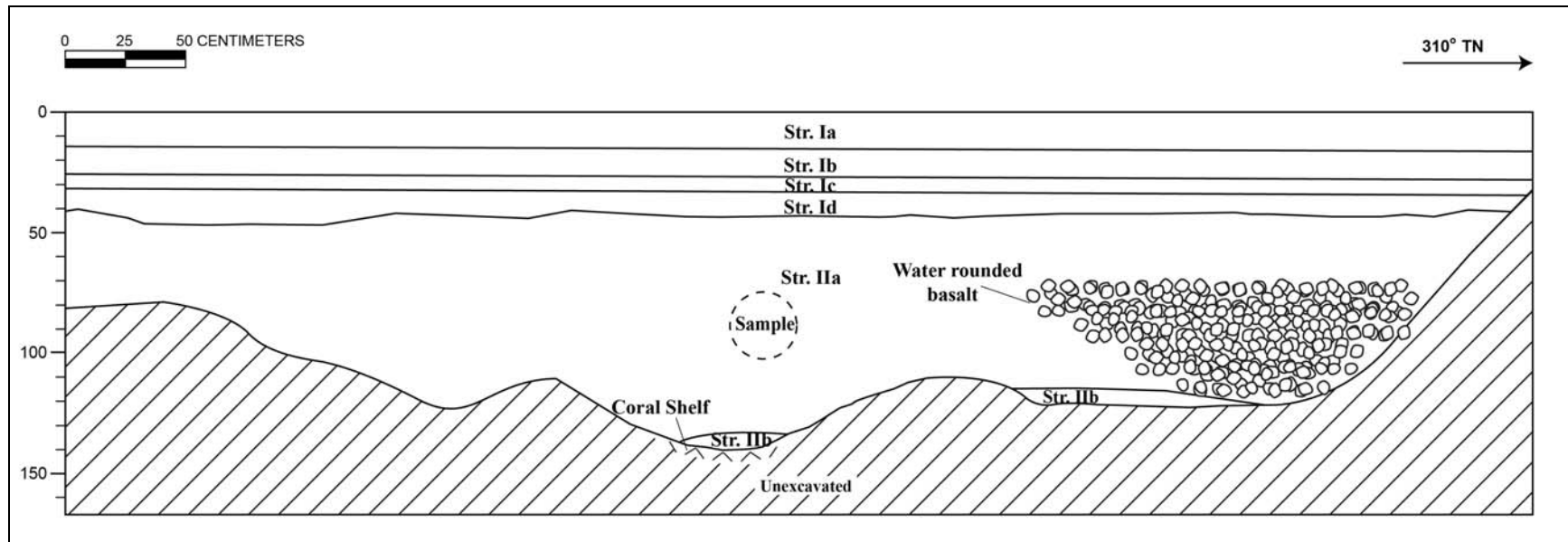




T-035 general location, view to southeast



T-035 southwest profile wall



T-035 southwest wall profile

## T-035 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt; parking lot surface
Ib	15–28	Fill; GLEY 1 5/10Y (greenish gray); very gravelly loam; structureless, single grain, weak, very fine, crumb structure; dry, weakly coherent consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; base course
Ic	28–32	Fill; 10 YR 3/3 (brown); silty clay; moderate, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; very abrupt, smooth lower boundary; fill over concrete
Id	32–44	Buried concrete slab
IIa	41–134	Natural; 5 YR 3/2 (dark reddish brown); silty clay loam; weak, fine, blocky structure; moist, friable consistency; plastic; terrigenous origin; diffuse, wavy lower boundary; natural alluvium. A dressed basalt stone, labeled Blue Basalt on profile, was just below the interface with Id
IIf	116–140	Natural; 10 YR 6/8 (brownish yellow); silty sandy loam; weak fine, crumb structure; moist, friable consistency; non-plastic; mixed origin; lower boundary not visible; natural sediment, coral oxidizing within sediment

### 3.22 Test Excavation 36 (T-036)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-010:068
<b>Elevation Above Sea Level:</b>	7.1 m
<b>UTM:</b>	616023.22 mE, 2358933.65 mN
<b>Max Length/Width/Depth:</b>	3.5 m / 0.93 m / 1.47 mbs
<b>Orientation:</b>	222 / 42° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 36 (T-036) was located 16 m northeast of Dillingham Boulevard within the 7-Eleven parking lot near the corner of Dillingham Boulevard and Mokauea Street. T-036 was located within private property. No utilities were indicated near T-036. The ground level was slightly elevated, 0.14 m above the outside parking lot surface.

**Summary of Background Research and Land Use:** Brown's 1883 map of Kalihi and Kapālama depicted T-036 within LCA 6450:1. LCA 6450:1 or the *'ili of Mokauea* (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. M. D. Monsarrat's 1897 map showed T-036 was located south of a rice plantation. The 1919, 1933, 1943 U.S. Army War Department Fire Control maps indicated that between 1919 and 1943 the region that surrounded T-036 was heavily developed with increased street grids and structures. The 1953 U.S. Army Mapping Service topographic map showed the formal Kalihi and Kapālama area was developed to its present configuration by this time.

No previous archaeology was conducted within the vicinity of T-036.

**Documentation Limitations:** T-036 was excavated to 1.47 mbs and reached the coral shelf. The lead utility pipe present in T-036 did not prevent or limit the complete excavation and documentation of T-036.

**Stratigraphic Summary:** The stratigraphy of T-036 consisted of both fill and natural sediments. The stratigraphy consisted of asphalt (Ia), a previous disturbed natural sandy clay loam (Ib), natural silty clay loam alluvium (II), overlying the coral shelf (III). The natural sediment encountered at 0.57 mbs conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were collected.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** One bulk sample taken from the southeast wall of Stratum II between 0.72 and 0.77 mbs (2.0 L). No material was recovered after the sample was wet-screened and sorted.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature that corresponded to the lead utility pipe encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth except for the sidewalk. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-036 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.4 mbs. No utilities were observed in the profile although an abandoned lead utility pipe was encountered during excavation. The maximum depth of clean signal return was approximately 0.8 mbs

**Summary:** T-036 was excavated to 1.47 mbs and was terminated at the coral shelf. Stratigraphy included fill material (Ia–Ib) over a single natural sediment (II). The stratigraphy generally conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). No archaeological deposits were observed. The sample results did not find significant archaeological cultural resources from the collected samples. No archaeological cultural resources were identified

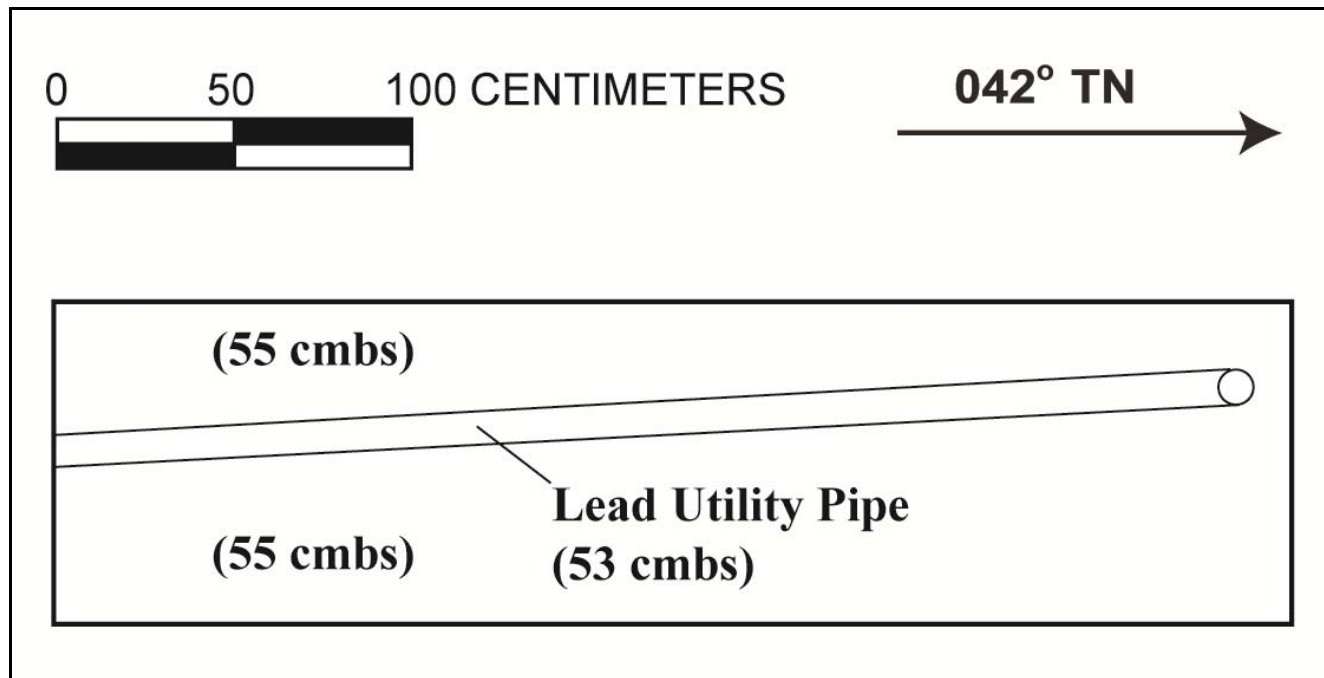




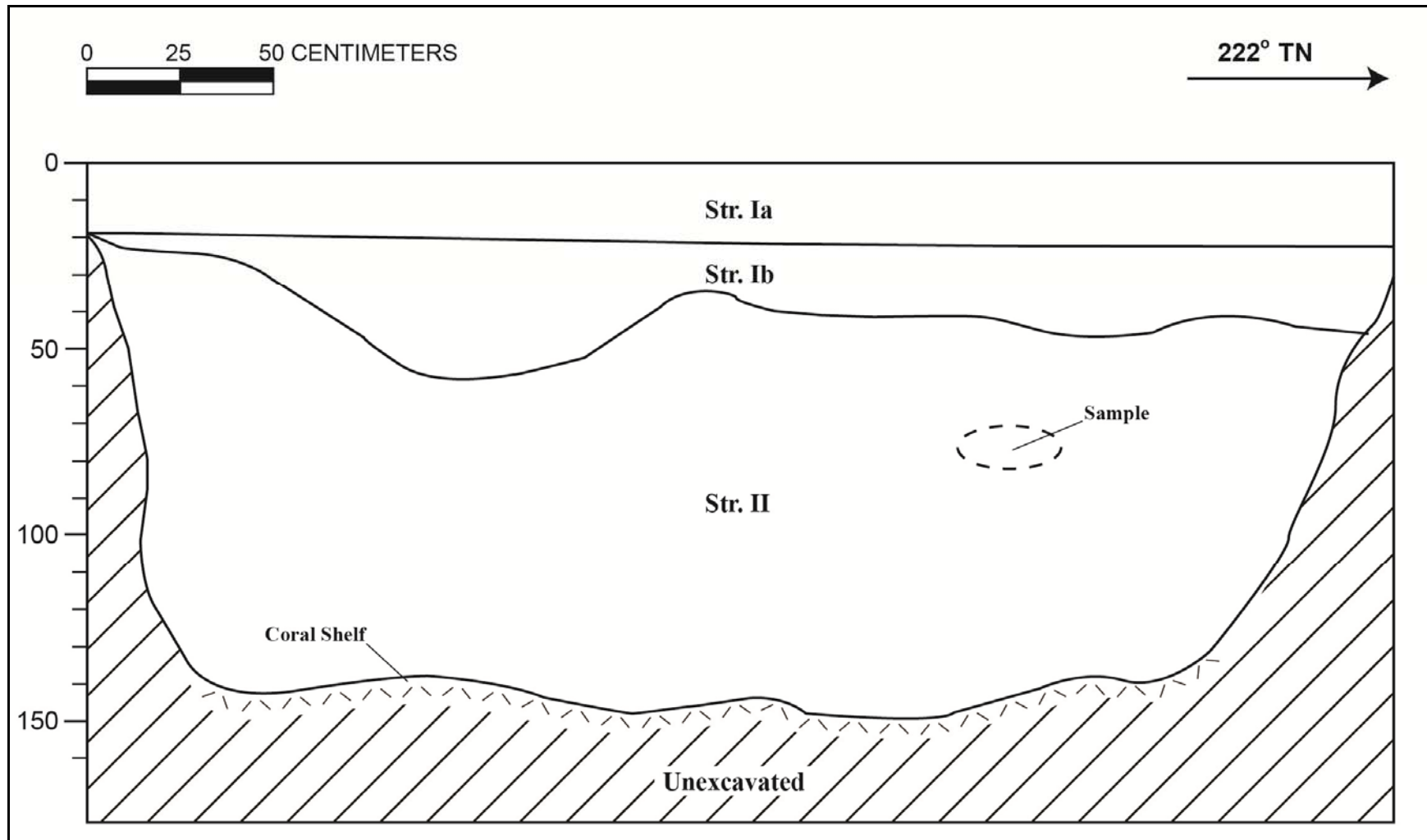
T-036 general location, view to north



T-036 northwest wall profile, view to west



T-036 plan view of excavation floor at 55–53 cmbs (Ib–II)



T-036 southeast wall profile

## T-036 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–23	Asphalt
Ib	19–57	Natural; 7.5 YR 3/4 (dark brown); very gravelly sandy clay loam; moderate, fine, blocky structure; moist, friable consistency; slightly plastic; mixed origin; diffuse, smooth to wavy lower boundary; previously disturbed natural sandy clay loam; banded with light gray construction sand/construction gravel, coral inclusions
II	20–147	Natural; 7.5 YR 3/4 (dark brown); silty clay loam; moderate, fine, blocky structure; moist, friable consistency; slightly plastic; terrigenous origin; clear, irregular lower boundary; natural alluvium

### 3.23 Test Excavation 37 (T-037)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-010:068
<b>Elevation:</b>	7.2 m
<b>UTM:</b>	616026.63 mE, 2358937.53 mN
<b>Max Length / Width / Depth:</b>	3.67 m / 0.91 m / 1 mbs
<b>Orientation:</b>	313 / 133° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Description:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 37 (T-037) was located 20 m northeast of Dillingham Boulevard. T-037 was located within the 7-Eleven convenience store, near the corner of Dillingham Boulevard and Mokauea Street. T-037 was located within private property. No utilities were indicated near T-037. T-037 was originally planned to be a 6 m by 0.6 m but was changed to be 3 m by 0.9 m to fit within the station footprint and avoid damaging the existing building. The ground level was elevated 0.14 m above the outside parking lot surface.

**Summary of Background Research and Land Use:** Brown's 1883 map of Kalihi and Kapālama depicted T-037 within LCA 6450:1. LCA 6450:1 or the *'ili of Mokauea* (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. M. D. Monsarrat's 1897 map showed T-037 was located south of a rice plantation. The 1919, 1933, and 1943 U.S. Army War Department Fire Control map series indicated that between 1919 and 1943 the region surrounding T-037 was heavily developed with increased street grids and structures. The 1953 U.S. Army Mapping Service topographic map showed the formal Kalihi and Kapālama area was developed to its present configuration by this time.

No previous archaeology was conducted within the vicinity of T-037.

**Documentation Limitations:** T-037 was excavated to the coral shelf at a depth of 1.2 mbs. A utility prevented the excavation of a small area within the northwestern end of the excavation. A natural depression in the coral shelf was hand excavated to 2.16 mbs.

**Stratigraphic Summary:** The stratigraphy of T-037 consisted of both fill and natural sediments. The observed stratigraphy consisted of concrete (Ia), very gravelly clay loam (Ib), silty clay loam (II), coral shelf (III). Stratum II a natural alluvial deposit with a disturbed upper boundary. The stratigraphy generally conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** Historic terracotta/earthenware flowerpot fragments (Acc. #037-A-1 and A-2) were collected from Stratum Ib at 0.68 mbs. The artifacts were considered historic artifacts consistent with the land use for the region.



**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** Terrestrial faunal remains were collected individually during excavation. Faunal remains were collected from Stratum Ia at 0.7 mbs. The remains consisted of several butchered (cut with a metal blade) fragments of *Bos taurus* ribs, a diaphysis section, and vertebrae fragments. The faunal remains were considered to be food remnants part of modern fill deposits.

**Sample Results:** One bulk sediment sample and one column sample were collected from Stratum II. The bulk sediment sample, collected between 1.00–1.10 mbs, was wet-screened yielding no cultural material. The column sample was not submitted for further analysis.

**GPR Discussion:** A review of amplitude slice maps indicated some linear features but these were not within the excavation boundaries. However, a utility pipe was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-037 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.35 mbs. No utilities were observed in the profile although a utility was encountered during excavation. The maximum depth of clean signal return was approximately 0.8 mbs.

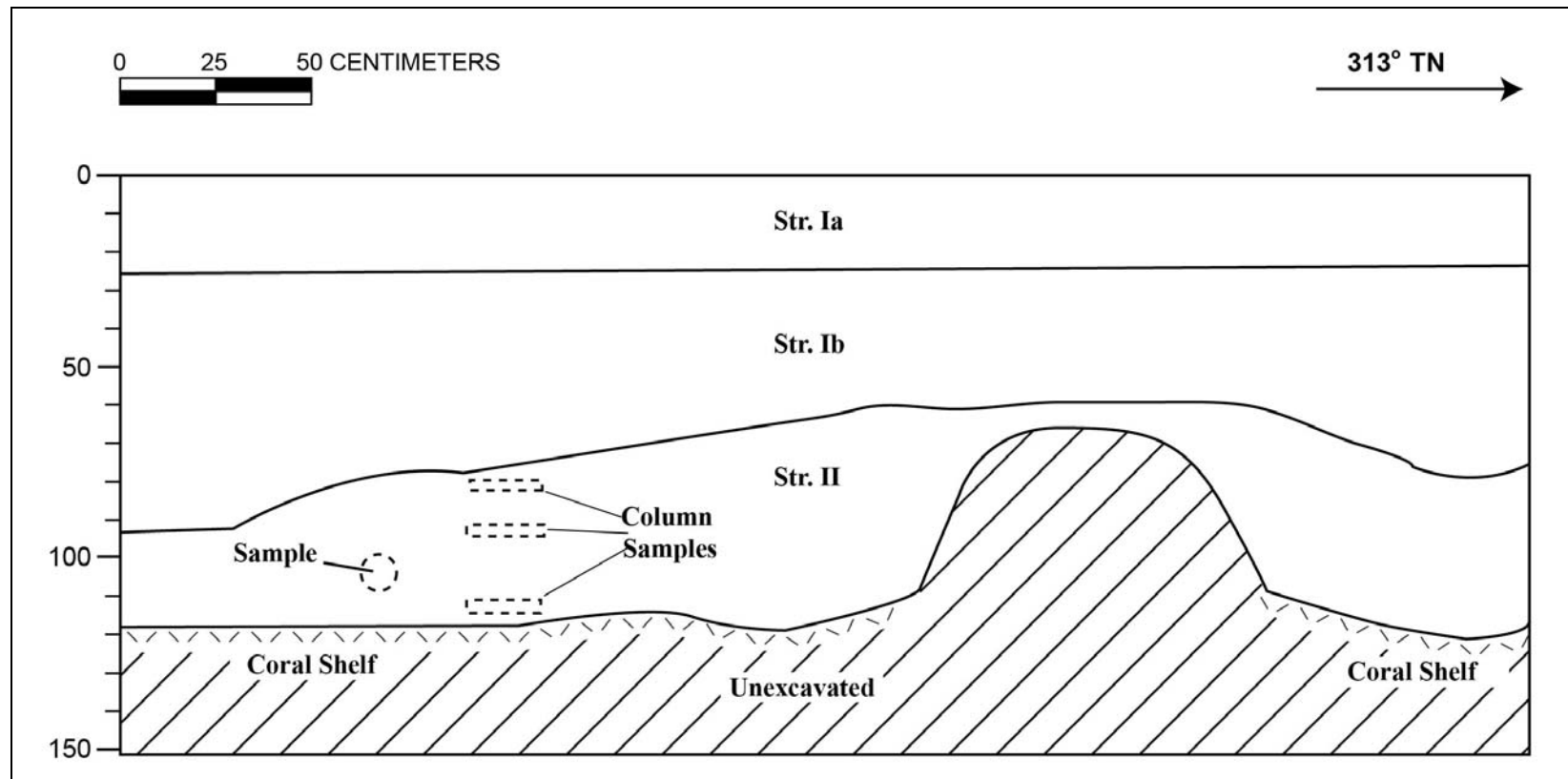
**Summary:** T-037 was excavated to 1.2 mbs (2.16 mbs shovel probe on the north portion) and reached the coral shelf. Stratigraphy was comprised of fill (Ia–Ib) and natural sediments (II–III). The natural sediment observed was consistent with the USDA Ewa silty clay loam (EmA) soil designation. Historic terracotta/earthenware sherds were collected from Stratum Ib (0.68 mbs). The artifacts collected from T-037 were considered historic artifacts consistent with the historic land use for the region. The faunal remains were considered to be food remnants part of modern fill deposits. The results of sample analysis did not identify any significant cultural material. No archaeological cultural resources were observed within T-037.



T-037 general location, view to southeast



T-037 south profile wall



T-037 south wall profile

## T-037 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–25	Concrete; abrupt, smooth lower boundary; concrete with electrical line running diagonally through T-037
Ib	25–94	Fill; 7.5 YR 3/3 (dark brown); very gravelly clay loam; structureless, single grain; moist, friable consistency; slightly plastic; mixed origin; clear, smooth lower boundary; contains terra cotta pot fragments, copper pipe piece; faunal, charcoal flecking, and gravel to boulder sized coral inclusions; possibly locally-procured fill similar to underlying alluvial deposit
II	60–120	Natural; 5 YR 3/3 (dark reddish brown); silty clay loam; fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt lower boundary; natural, mixed energy alluvial deposit
III	120–216	Natural; coral shelf; coral shelf



T-037 flowerpot/planter fragments (Acc. #037-A-1 and A-2) from Stratum Ib



### 3.24 Test Excavation 38 (T-038)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-009:001
<b>Elevation Above Sea Level:</b>	7.24 m
<b>UTM:</b>	615989.66 mE, 2358896.39 mN
<b>Max Length/Width/Depth:</b>	6.4 m / 0.8 m / 1.35 m
<b>Orientation:</b>	46 / 226° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 38 (T-038) was located 16 m northeast of Dillingham Boulevard. T-038 was within the privately owned Dillingham Café parking lot. No utilities were noted near T-038. The surrounding topography was level

**Summary of Background Research and Land Use:** Brown's 1883 map of Kalihi and Kapālama depicted T-038 within LCA 6450:1. LCA 6450:1 or the *'ili of Mokauea* (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. M. D. Monsarrat's 1897 map showed T-038 was located south of a rice plantation. The 1919, 1933, and 1943 U.S. Army War Department Fire Control maps indicated that between 1919 and 1943 the region that surrounded T-038 was heavily developed with increased street grids and structures. The 1953 U.S. Army Mapping Service topographic map showed the formal Kalihi and Kapālama area was developed to its present configuration by this time.

No previous archaeology was conducted within the vicinity of T-038.

**Documentation Limitations:** T-038 was excavated to the coral shelf at a depth of 1.35 mbs. A concrete utility jacket prevented the excavation of the southwestern half of T-038. The northeastern portion of T-038 was excavated to the coral shelf.

**Stratigraphic Summary:** The stratigraphy of T-038 consisted of both fill and natural sediments. The observed stratigraphy consisted of asphalt (Ia), silty clay loam base course (Ib), very gravelly silty loam (Ic), gravelly silty loam (Id), very gravelly sandy loam (Ie), natural silty clay loam (IIa), natural silty sandy loam (IIb). Stratum IIa was observed at 0.6 mbs. The stratigraphy generally conformed to the USDA soil designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** No sample analysis was conducted.



**GPR Discussion:** A review of amplitude slice maps indicated no linear features although a concrete jacket and utility pipe were encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-038 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.25 mbs and again around 0.5 mbs. An anomaly was observed in the profile and corresponded to the concrete jacket encountered during excavation. The maximum depth of clean signal return was approximately 0.75 mbs.

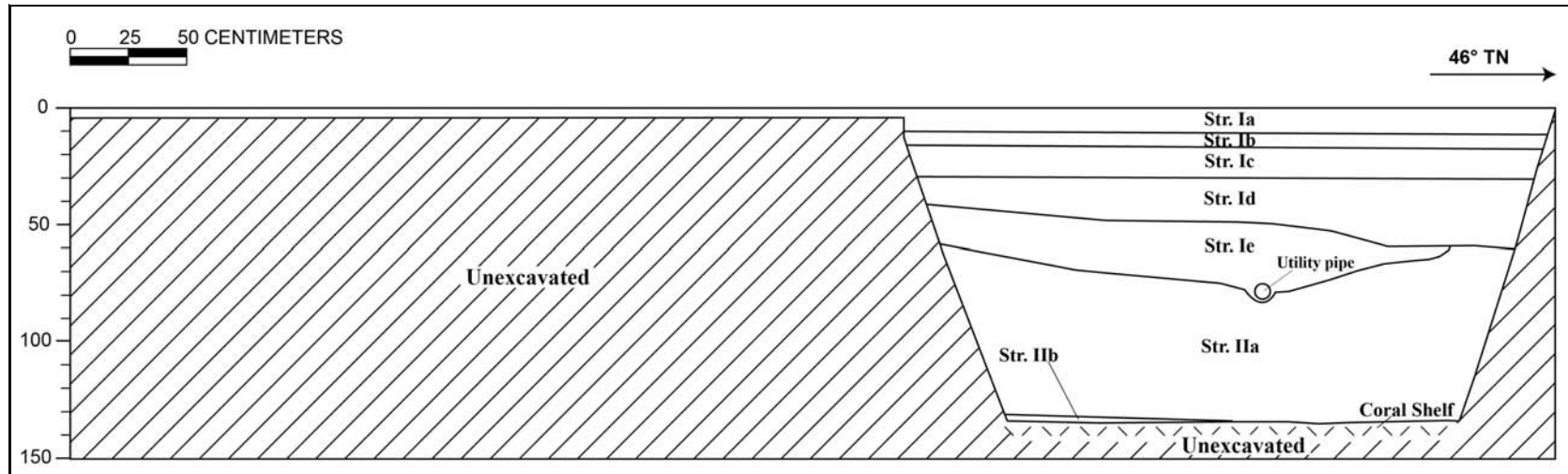
**Summary:** T-038 was excavated to 1.35 mbs and encountered the coral shelf in the northeastern portion. T-038 contained fill (Ia–Ie) and natural material (IIa–IIb). The stratigraphy generally conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). The upper boundary of Stratum IIa appeared to have been truncated and previously disturbed during deposition of upper fill layers. The disturbance was likely related to the urban development and construction of residential neighborhoods in Kalihi from 1919 to 1940s. No archaeological cultural resources were observed.



T-038 general location, view to north



T-038 northwest profile wall, view to north



T-038 northwest wall profile; adjacent "Unexcavated" portion of excavation contained utility jacket

## T-038 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–11	Asphalt
Ib	11–17	Fill; 10 YR 3/3 (dark brown); silty clay loam; structureless, single-grain; firm consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; locally procured fill
Ic	17–30	Fill; GLEY 2 5/5BG (greenish gray); very gravelly silty loam; single-grain; dry, weakly coherent consistency; non-plastic; mixed origin; clear, smooth lower boundary; imported/ manufactured sub angular basalt base course
Id	30–60	Fill; 5 YR 3/2 (dark reddish brown); gravelly silty loam; single-grain, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; fill deposit
Ie	45–85	Fill; GLEY 1 5/10Y (greenish gray); very gravelly sandy loam; single-grain; dry, weakly coherent consistency; non-plastic; mixed origin; clear, smooth lower boundary; contains concrete pipe; gravelly basalt base course with a sandy loam matrix
Ila	60–135	Natural; 5 YR 3/3 (dark reddish brown); silty clay loam; weak, fine, blocky structure; moist, firm consistency; plastic; terrigenous origin; diffuse lower boundary; silty clay loam natural alluvial deposit
Ilb	132–135	Natural; 10 YR 6/8 (brownish yellow); silty sandy loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; mixed origin; lower boundary not visible; natural sediment, coral oxidizing within sediment

### 3.25 Test Excavation 39 (T-039)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-009:001
<b>Elevation Above Sea Level:</b>	7.1 m
<b>UTM:</b>	615993.93 mE, 2358892.59 mN
<b>Max Length/Width/Depth:</b>	6.75 m / 0.79 m / 1.49 mbs
<b>Orientation:</b>	44 / 224° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 39 (T-039) was located southwest of the Dillingham Boulevard and Mokauea Street intersection, within a paved parking lot area just outside of Dillingham Cafe. T-039 was located in private property. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 map of Kalihi and Kapālama depicted T-039 located within LCA 6450:1, which was awarded to Kaunuohua and contained taro *lo'i*. M. D. Monsarrat's 1897 map showed T-039 just outside a rice plantation. The 1919, 1933, and 1943 U.S. Army War Department Fire Control maps indicated that T-039 was located within a heavily developed area near the center of Kalihi. The 1953 U.S. Army Mapping Service topographic map showed T-039 within the formal Kalihi and Kapālama area.

No previous archaeology was conducted within the vicinity of T-039.

**Documentation Limitations:** T-039 was excavated to the coral shelf at 1.49 mbs. Utilities present in the southwest and northeast ends of the test excavation limited excavation to the central portion of T-039.

**Stratigraphic Summary:** The stratigraphy of T-039 consisted of fill strata overlying natural sediment to the coral shelf. Observed strata included asphalt (Ia), very gravelly sandy loam (Ib), silty clay loam (Ic), overlying natural silty clay loam (IIa), and natural silty clay loam (IIb) to the coral shelf. The stratigraphy conformed to the USDA soil designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** Two bulk sediment samples were collected from the excavation floor of Stratum IIa at 1.20 mbs (2.0 L), and from Stratum IIb at 1.27 mbs (1.5 L). The sample from

Stratum IIa consisted mostly of very small to medium water-worn basalt gravels. No material or vegetation was present within the Stratum IIb sample.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features although two utilities were encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-039 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.15 mbs and again around 0.5 mbs. Anomalies were observed in the profile and corresponded to the utilities encountered during excavation. The maximum depth of clean signal return was approximately 0.85 mbs.

**Summary:** T-039 was excavated to the coral shelf at 1.49 mbs. The stratigraphy of T-039 consisted of fill strata (Ia–Ic) overlying natural sediment (IIa–IIb) to the coral shelf. The stratigraphy conformed to the USDA soil designation of Ewa silty clay loam (EmA). No archaeological cultural resources were identified.

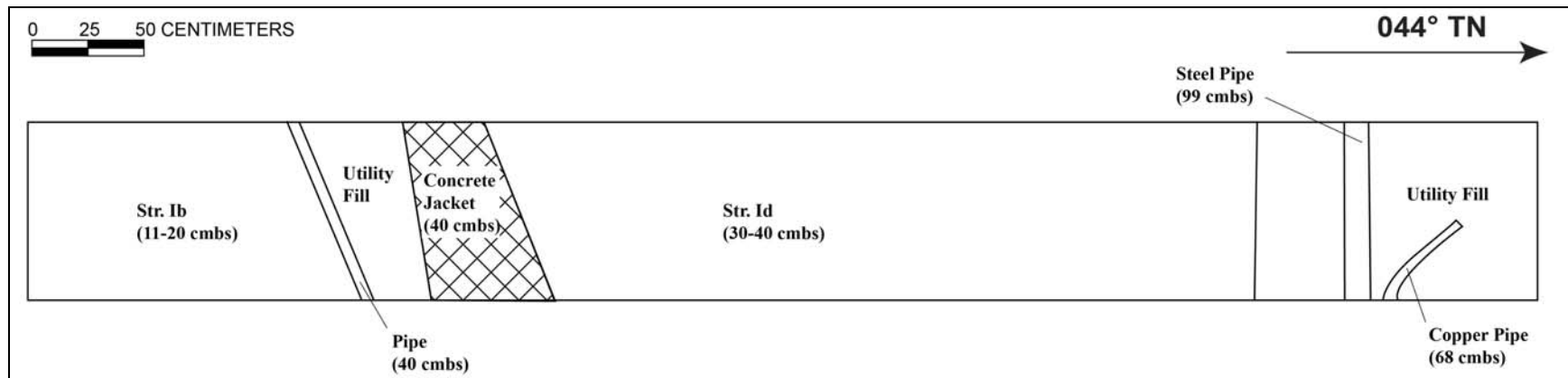




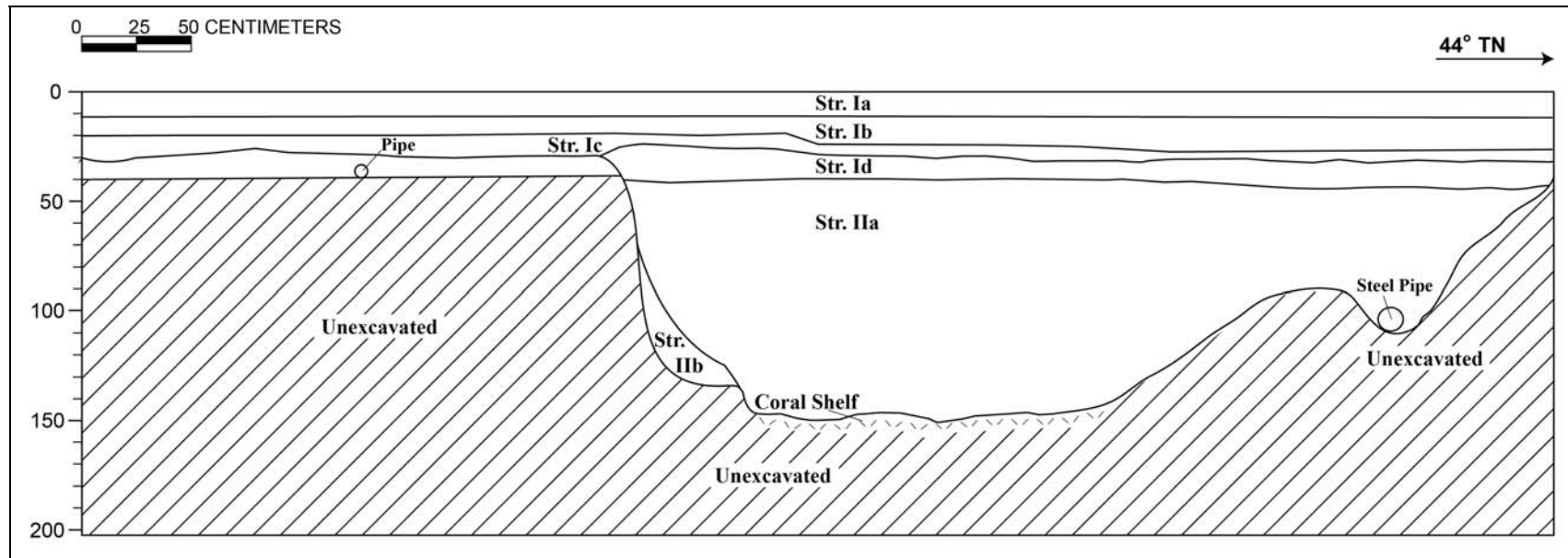
T-039 general location, view to northeast



T-039 northwest wall profile



T-039 plan view of the excavation floor at 40–99 cmbs (Ib–Id)



T-039 northwest wall profile

## T-039 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–11	Asphalt
Ib	11–20	Fill; 7.5 YR 3/2 (dark brown); very gravelly sandy loam; fine, blocky structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; gravel base course, asphalt at northeast end
Ic	20–30	Fill; 7.5 YR 3/4 (dark brown); silty clay loam; weak, fine, blocky structure; firm consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; locally procured fill similar to the alluvial sediments that occur in the Kalihi and Kapālama areas
Id	30–40	Fill; 10 YR 8/3 (very pale brown); gravelly, cobbly sand; fine, single-grain structure; moist, friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill
Ila	40–149	Natural; 5 YR 3/4 (dark reddish brown); silty clay loam; weak, blocky structure; moist, firm consistency; plastic; terrigenous origin; lower boundary not visible; EmA
Ilb	85–135	Natural; 10 YR 6/8 (brownish yellow); silty clay loam; weak, crumb structure; moist, firm consistency; plastic; terrigenous origin; diffuse lower boundary; alluvium with water rounded cobbles

### 3.26 Test Excavation 40 (T-040)

<b>Ahupua'a:</b>	Kalihi
<b>LCA :</b>	6450:1
<b>TMK #:</b>	1-2-010:068
<b>Elevation Above Sea Level:</b>	7.22 m
<b>UTM:</b>	616038.82 mE, 2358927.31 mN
<b>Max Length / Width / Depth:</b>	3.70 m / 0.91 m / 1.0 mbs
<b>Orientation:</b>	86 / 266° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test excavation 40 (T-040) was located northeast of the intersection of Dillingham Boulevard near the 7-Eleven structure. T-040 was located on private property. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map depicted T-040 located within LCA 6450:1, which was awarded to Kaunuohua and contained taro *lo'i*. Monsarrat's 1897 map showed T-040 within the southern edge of a rice plantation. As indicated in the 1919, 1933, and 1943 U.S. Army War Department Fire Control maps and in the 1953 U.S. Army Mapping Service topographic map T-040 was located in a heavily developed area near the center of Kalihi. According to the 1953 U.S. Army Mapping Service topographic map, T-040 was located in the formal Kalihi and Kapālama area.

No previous archaeology was conducted within the vicinity of T-040.

**Documentation Limitations:** T-040 was excavated to the coral shelf at 1.0 mbs. A concrete jacket was encountered at 0.40 mbs in the western end of T-040, which limited documentation.

**Stratigraphic Summary:** The stratigraphy of T-040 consisted of fill strata overlying natural sediment that continued to the coral shelf. Observed strata included asphalt (Ia) and locally procured, reworked gravelly clay loam (Ib) overlying natural sediment silty clay loam (II) to the coral shelf. The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** One bulk sample was collected from Stratum II between 0.70 and 0.86 mbs (0.5 L). The sample was wet-screened. No cultural material was identified. The results of sample analysis supported the identification of Stratum II as natural sediment.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features which might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-040 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.2 mbs. No utilities were observed in the profile although a concrete jacket was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

**Summary:** T-040 was excavated to the coral shelf at 1.0 mbs. The stratigraphy of T-040 consisted of fill strata (Ia–Ib) overlying natural sediment (II) to the coral shelf. The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). The results of sample analysis support the identification of Stratum II as natural sediment. No archaeological cultural resources were identified within T-040.

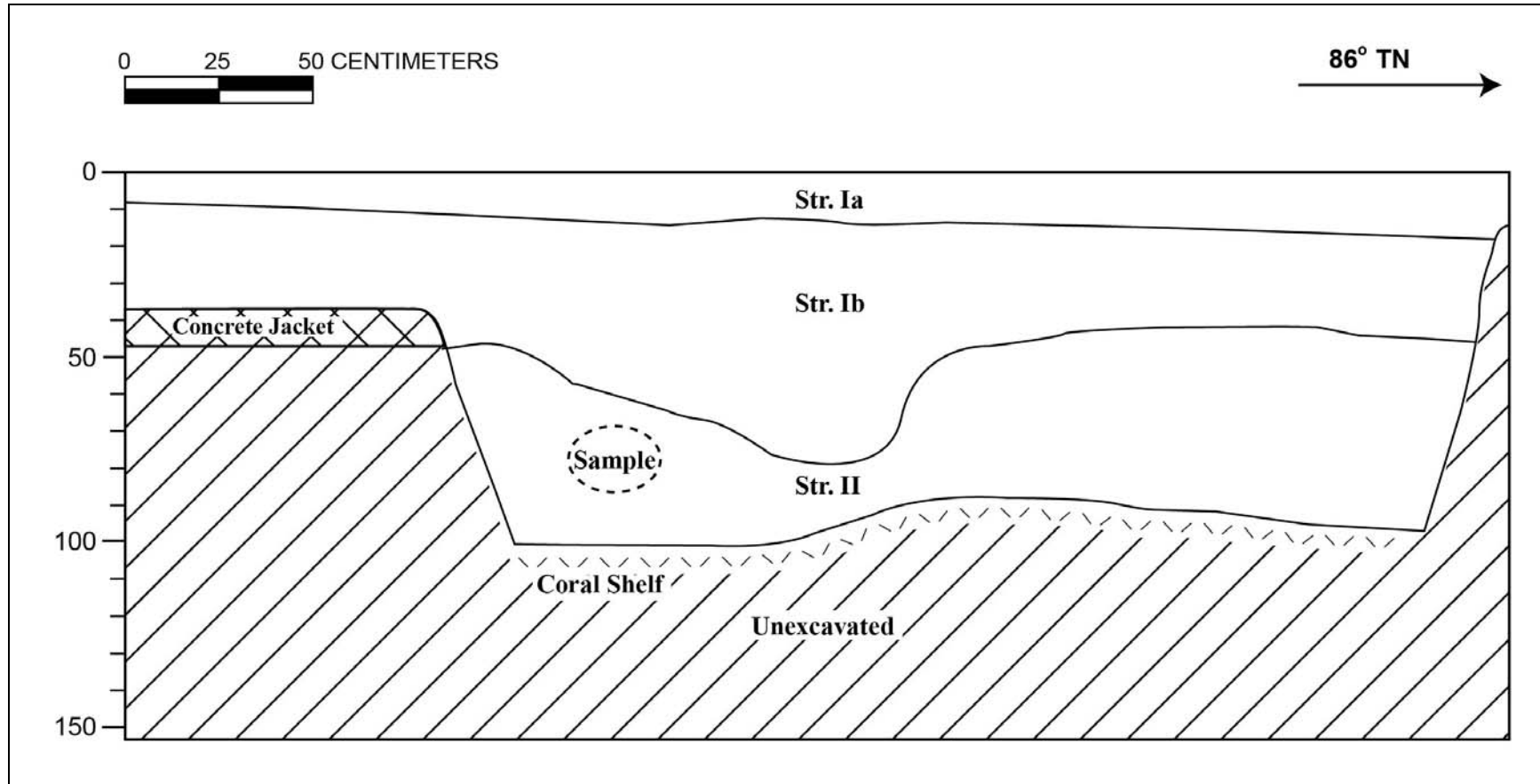




T-040 general location, view to west



T-040 north wall profile, view to northeast



T-040 north wall profile

## T-040 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–20	Asphalt
Ib	9–78	Fill; 5YR 3/3 (dark reddish brown); very gravelly clay loam; moderate, fine, blocky structure; dry, strong consistency; plastic; mixed origin; clear, wavy lower boundary; construction base course gravelly backfill; coral/gravel matrix
II	42–100	Natural; 5YR 3/3 (dark reddish brown); silty clay loam; fine, blocky structure; dry, slightly hard, strong consistency; plastic; terrigenous origin; clear, irregular lower boundary

### 3.27 Test Excavation 41 (T-041)

<b>Ahupua'a:</b>	Kalihi
<b>LCA:</b>	6450:1
<b>TMK #:</b>	1-2-009 [Plat]
<b>Elevation Above Sea Level:</b>	6.99 m
<b>UTM:</b>	616017.75 mE, 2358906.34 mN
<b>Max Length / Width / Depth:</b>	3.08 m / 0.90 m / 0.93 mbs
<b>Orientation:</b>	320 / 140° TN
<b>Targeted Project Component:</b>	Station Column
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 41 (T-041) was located in the left turn lane of Dillingham Boulevard at the Mokauea Street intersection, between Dillingham Café and 7-Eleven. T-041 was located on city property. An AT&T line was 3.7 m southwest of T-041 and a water line was 3.2 m northeast of T-041. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map showed T-041 was located within the large LCA 6450:1, which was awarded to Kaunuohua and included taro *lo'i*. M. D. Monsarrat's 1897 map showed T-041 at the southern boundary of a rice plantation. In the early twentieth century this portion of Kalihi developed rapidly with the creation of a regular grid of streets and infilling with residences and stores, as was indicated in the 1919, 1933, and 1943 U.S. Army War Department Fire Control maps. The 1953 U.S. Army Mapping Service topographic map located T-041 within the formal Kalihi and Kapālama area.

No previous archaeology was conducted within the vicinity of T-041.

**Documentation Limitations:** T-041 was excavated to the coral shelf at 0.93 mbs. There were no factors that limited the documentation of T-041.

**Stratigraphic Summary:** The stratigraphy of T-041 consisted of fill strata overlying natural sediment to the coral shelf. Observed strata included asphalt road surface (Ia) and crushed coral base course fill (Ib) overlying natural silty clay loam (II) to the coral shelf. The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifact Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** A bulk sediment sample (2.0 L) was collected from Stratum II between 0.50 and 0.73 mbs. The sample was wet-screened and three charcoal fragments (0.1 g) were collected. The results of sample analysis supported the interpretation of Stratum II as natural sediment.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature. This seems to be a false positive, as corresponding feature was not encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-041 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.25 mbs. An anomaly was observed in the profile but was not encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

**Summary:** T-041 was excavated to the coral shelf at 0.93 mbs. The stratigraphy of T-041 consisted of fill strata (Ia–Ib) overlying natural sediment (II) to the coral shelf. The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). No significant archaeological cultural resources were identified within T-041.



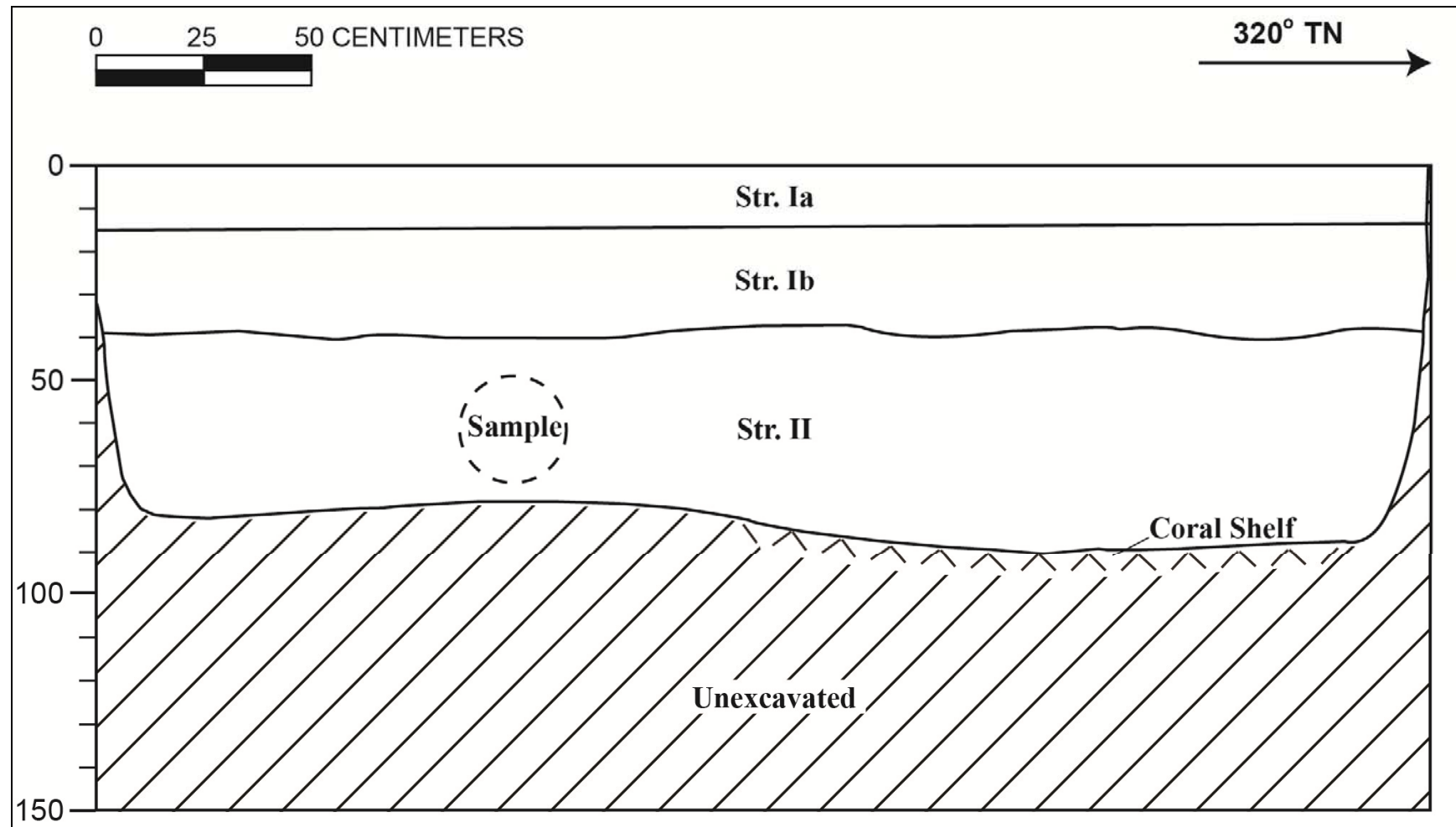


T-041 general location, view to west



T-041 southwest profile wall





T-041 southwest wall profile

## T-041 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt
Ib	15–42	Fill; 10 YR 8/1 (white) extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; crushed coral base course
II	40–93	Natural; 10 YR 3/6 (dark yellowish brown); silty clay loam; weak, fine, blocky structure; moist, friable consistency; slightly plastic; terrigenous; clear, wavy lower boundary; minor amounts of charcoal flecking; A-horizon, part of EmA series

### 3.28 Test Excavation 42 (T-042)

<b>Ahupua'a:</b>	Kalihi
<b>LCA:</b>	6450:1
<b>TMK #:</b>	1-2-009:001
<b>Elevation Above Sea Level:</b>	7.12 m
<b>UTM:</b>	615999.30 mE, 2358887.81 mN
<b>Max Length/Width/Depth:</b>	6.84 m / 0.74 m / 3.1 mbs
<b>Orientation:</b>	36 / 216° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 42 (T-042) was located approximately 30 m southwest of the Dillingham Boulevard and Mokauea Street intersection. T-042 was located on private property. There were no utilities indicated near T-042. The excavation was slightly elevated from the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map showed T-042 located within LCA 6450:1, which was awarded to Kaunuohua and contained taro *lo'i*. Monsarrat's 1897 map showed T-042 just outside a rice plantation. Between the 1919 U.S. Army War Department map and the 1953 U.S. Army Mapping Service map T-042 was located in a heavily developed area near the center of Kalihi. By 1953 T-042 was in the formal Kalihi and Kapālama area.

No previous archaeology was conducted within the vicinity of T-042.

**Documentation Limitations:** T-042 was excavated to a depth of 3.1 mbs. Utilities present in the northeast and southwest ends limited the documentation of those portions of T-042.

**Stratigraphic Summary:** The stratigraphy of T-042 consisted of fill strata to the base of excavation. Observed strata included asphalt (Ia), very gravelly clay loam (Ib), gravel base course (Ic), silty clay fill (Id), and sandy loam fill (Ie). An asphalt slab portion was observed within Stratum Id. The slab did not appear to be in situ. The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifact Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated linear features that corresponded to the metal pipes and concrete jacket encountered in the southwestern end of the excavation.

Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-042 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.15 mbs and again around 0.8 mbs. Two anomalies were observed in the profile and corresponded to the utilities encountered in the southwest and northeast ends of the excavation. The maximum depth of clean signal return was approximately 1.15 mbs.

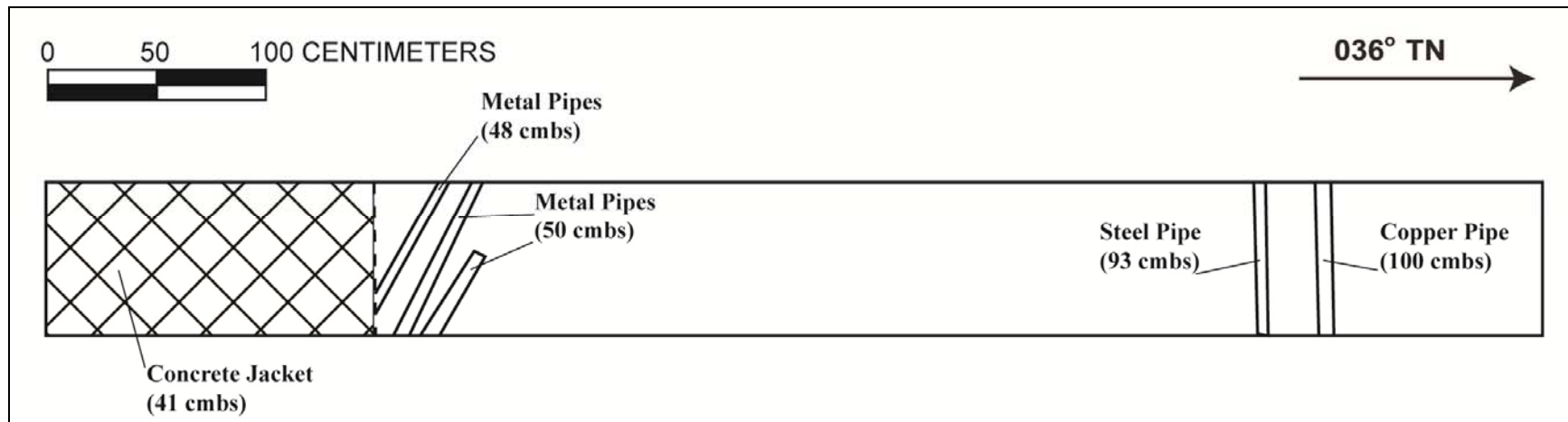
**Summary:** T-042 was excavated to a depth of 3.1 mbs. The stratigraphy of T-042 consisted of fill strata to the base of excavation (Ia–Ie). An asphalt slab portion was observed within Stratum Id. The slab did not appear to be in-situ. The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA). No natural sediment was observed. No archaeological cultural resources were identified within T-042.



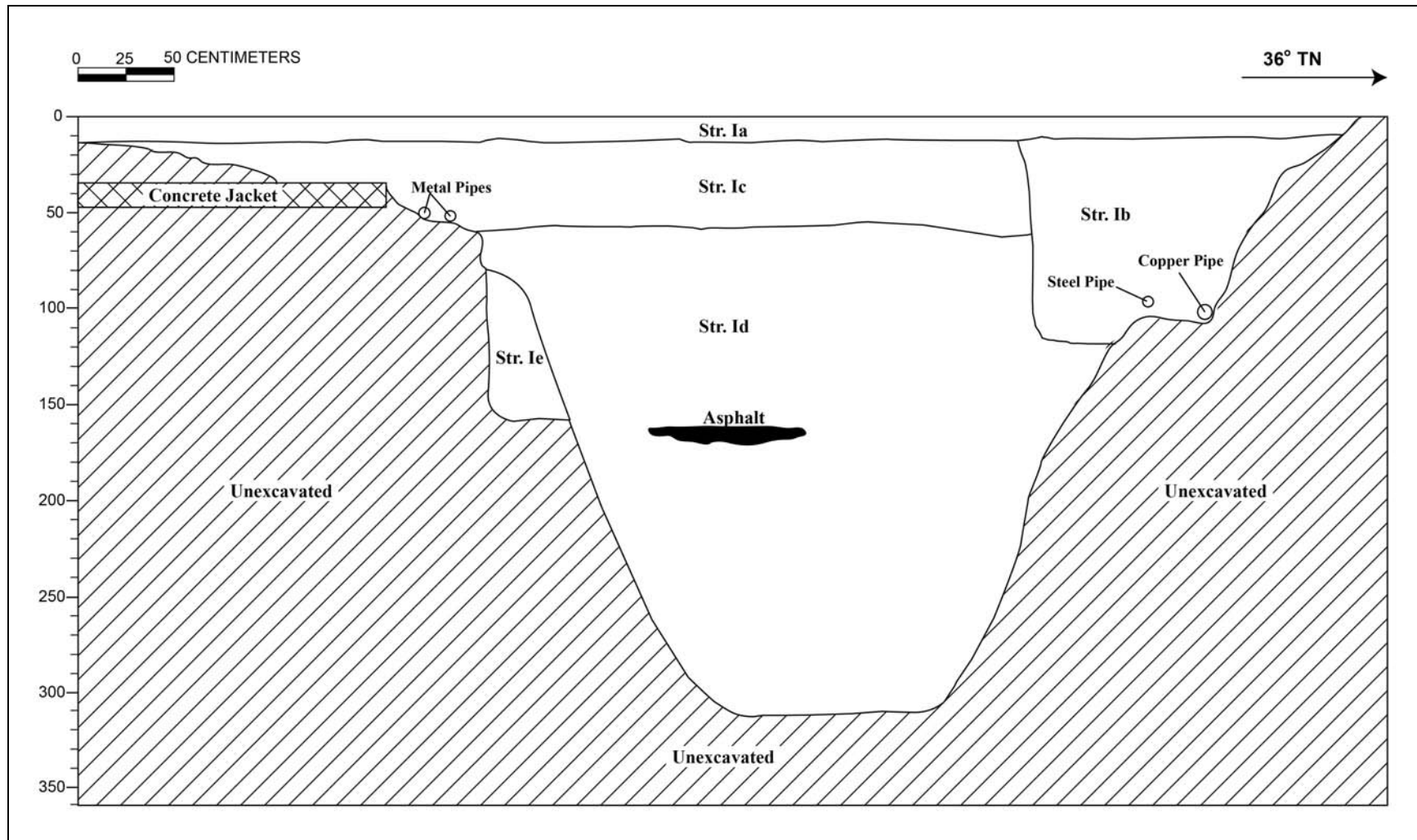
T-042 general location, view to southwest



T-042 northwest profile wall



T-042 plan view of concrete jacket and utilities encountered



T-042 northwest wall profile



## T-042 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–11	Asphalt
Ib	10–52	Fill; 7.5 YR 4/4 (brown); very gravelly clay loam; moderate, fine, blocky structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt smooth lower boundary; coral inclusions, concrete jacket and 3 metal pipes
Ic	11–57	Fill; 2.5 YR 3/3 (dark reddish brown); very gravelly loam; structureless, single-grain; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; imported basalt gravel base course
Id	55–310	Fill; 7.5 YR 3/4 (dark brown); silty clay; structureless, massive; moist, firm consistency; plastic; terrigenous origin; lower boundary not observed; asphalt encountered; fill deposit.
Ie	80–157	Fill; GLEY 2 5/5 BG (greenish gray); sandy loam; very fine, crumb structure; dry, weakly coherent consistency; non-plastic; mixed origin; imported fill deposit.

### 3.29 Test Excavation 43 (T-043)

<b>Ahupua'a:</b>	Kalihi
<b>LCA:</b>	6450:1
<b>TMK #:</b>	1-2-003 [Plat]
<b>Elevation Above Sea Level:</b>	6.9 m
<b>UTM:</b>	616049.26 mE, 2358878.05 mN
<b>Max Length/Width/Depth:</b>	0.92 m / 3.06 m / 1.25 mbs
<b>Orientation:</b>	146 / 326° TN
<b>Targeted Project Component:</b>	Guideway Column
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 43 (T-043) was located approximately 20 m southeast of the intersection of Dillingham Boulevard and Mokauea Street. T-043 was located on public property belonging to the City and County of Honolulu. A water line was located 5.3 m northeast of T-043. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map showed T-043 located within LCA 6450:1, which was awarded to Kaunuohua and contained taro *lo'i*. Monsarrat's 1897 map showed T-043 20 m south of a rice plantation. As indicated in the 1919, 1933, and 1943 U.S. Army War Department Fire Control maps and in the 1953 U.S. U.S. Army Mapping Service topographic map T-043 was in a heavily developed residential area near the center of Kalihi. The U.S. U.S. Army Mapping Service topographic map of 1953 located T-043 in the formal Kalihi and Kapālama area.

No previous archaeology was conducted within the vicinity of T-043.

**Documentation Limitations:** T-043 was excavated to the coral shelf at 1.25 mbs. There were no factors that limited the documentation of T-043.

**Stratigraphic Summary:** The stratigraphy of T-043 consisted of fill overlying natural sediment to the coral shelf. Observed strata included asphalt (Ia) and crushed coral base course (Ib) overlying natural silty clay loam with charcoal flecking (II) to the coral shelf (III). The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** A bulk sediment sample was collected from Stratum II between 0.51 and 0.64 mbs (2.5 L). No materials were collected from the sample after it was wet-screened and analyzed.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features that might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-043 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.4 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.9 mbs.

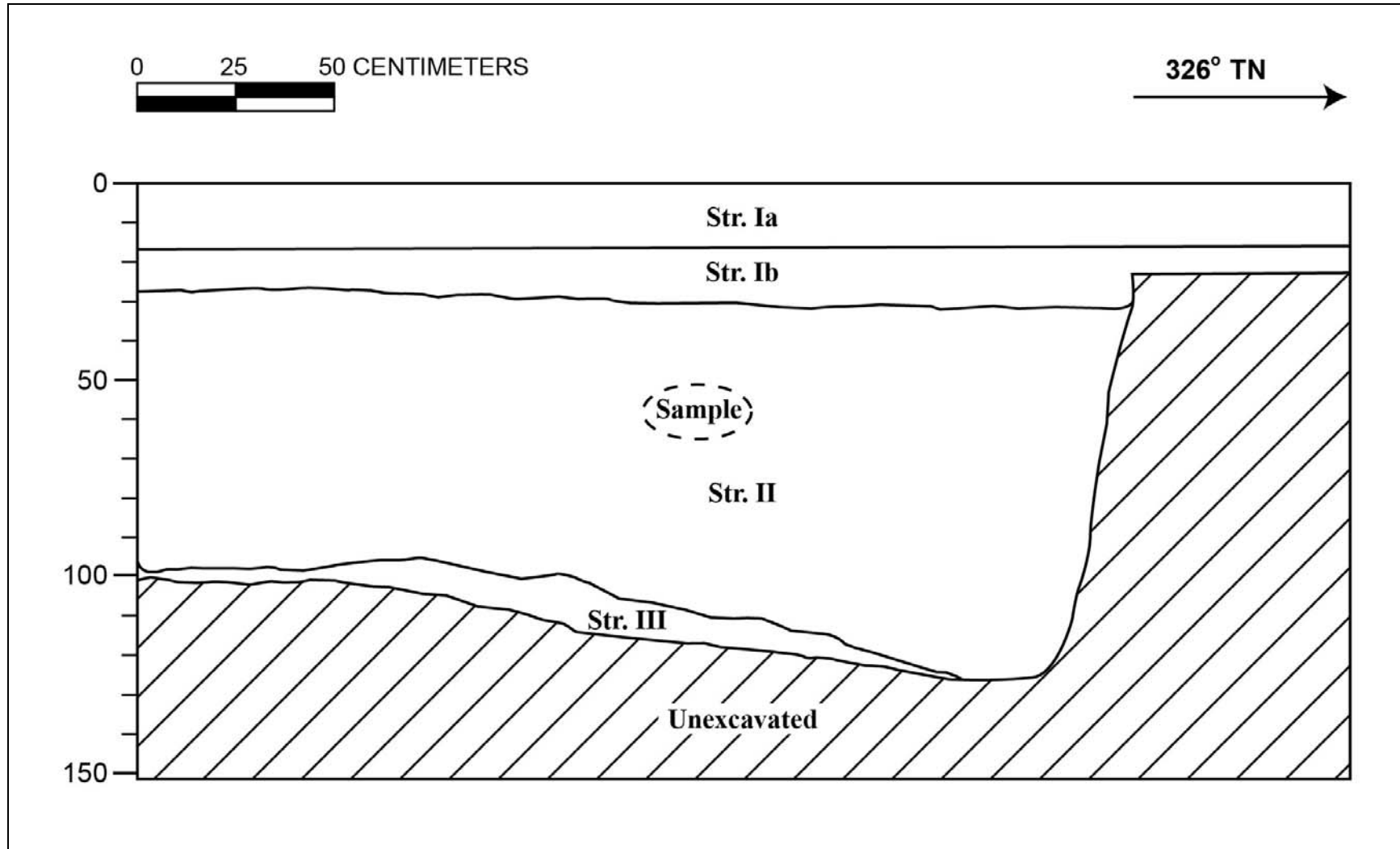
**Summary:** T-043 was excavated to the coral shelf at 1.25 mbs. The stratigraphy of T-043 consisted of fill strata (Ia–Ib) overlying natural sediment (II) to the coral shelf (III). The stratigraphy conformed to the USDA soil survey designation of Ewa silty clay loam (EmA). No material was identified during sample analysis, indicating the charcoal flecking viewed during documentation was from root burn or Ib, and supporting the identification of Stratum II as a natural alluvial deposit. No archaeological cultural resources were identified within T-043.



T-043 general location, view to south



T-043 southwest profile wall



T-043 southwest wall profile

## T-043 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–16	Asphalt
Ib	16–32	Fill; 10 YR 8/1 (white) extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; crushed coral base course
II	27–125	Natural; 7.5 YR 3/4 (dark brown); silty clay loam; weak, fine, crumb structure; moist, friable consistency; plastic; terrigenous origin; clear, wavy lower boundary; contains minor charcoal flecks; natural alluvium consistent with Ewa silty clay loam
III	95–125	Natural; coral bedrock; marine origin; lower boundary not visible; excavated portion of coral shelf



### 3.30 Test Excavation 44 (T-044)

<b>Ahupua'a:</b>	Kalihi
<b>LCA:</b>	6450:1
<b>TMK #:</b>	1-2-003: 018
<b>Elevation Above Sea Level:</b>	6.4 m
<b>UTM:</b>	616101.70 mE, 2358813.12 mN
<b>Max Length/Width/Depth:</b>	3.05 m / 0.90 m / 1.75 mbs
<b>Orientation:</b>	315 / 135° TN
<b>Targeted Project Component:</b>	Utility relocation
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 44 (T-044) was located in the Island Recycling parking lot on Dillingham Boulevard between Mokauea Street and Kalihi Street. T-044 was located on the southwest side of Dillingham Boulevard on privately-owned property. Nearby utilities included a telephone and sewer line (1.3 m northeast). T-044 was level with the road surface.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map depicted T-044 within LCA 6450:1. LCA 6450:1 or the *'ili of Mokauea* (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. Monsarrat's 1897 map showed T-044 was approximately 70 m south of a rice plantation and 186 m west of a pineapple plantation. By 1919 the plantations were no longer present. As indicated in the 1919, 1933, and 1943 U.S. Army War Department Fire Control maps and in the 1953 U.S. Army Mapping Service topographic map, the region surrounding T-044 was heavily developed with increased street grids and structures. During the same period T-044 was 271 m northeast of the former OR&L railroad in a heavily developed residential area near the center of Kalihi. The U.S. Army Mapping Service topographic map of 1953 located T-044 just west of Kalihi Kai School, and the formal Kalihi and Kapālama area had been developed into its present configuration.

No previous archaeology was conducted within the vicinity of T-044.

**Documentation Limitations:** T-044 was excavated to the coral shelf at 1.75 mbs. There were no factors that limited the documentation of T-044.

**Stratigraphic Summary:** The stratigraphy of T-044 consisted of fill overlying natural sediment to the coral shelf. Observed strata included asphalt (Ia), gravelly, sandy clay loam base course (Ib), natural silty clay loam (II), and coral shelf (III). Medium patches of dark staining were observed throughout Stratum II, which was interpreted as decomposed roots or root stains within a natural alluvial deposit. The stratigraphy conformed to the USDA soil designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

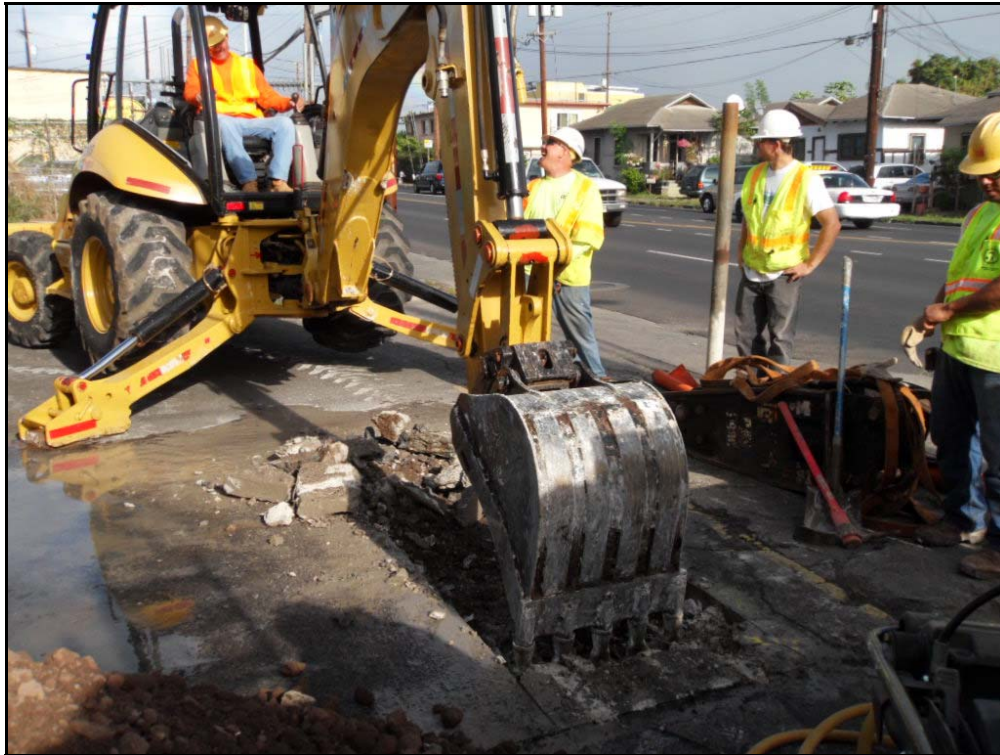
**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** Two bulk sediment samples were collected from Stratum II of T-044 at 0.40–0.56 mbs and 0.53–0.77 mbs. Both samples were wet-screened yielding no significant material.

**GPR Discussion:** A review of amplitude slice maps indicated two linear anomalies that corresponded to the utilities encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increased again around 0.5 mbs.

GPR depth profiles for T-044 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.25 mbs. Several anomalies were observed in the profile and these corresponded to the utilities encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

**Summary:** T-044 was excavated to 1.75 mbs and reached the coral shelf. The stratigraphy of T-044 consisted of fill (Ia and Ib) overlying natural sediment (II) to the coral shelf (III). The stratigraphy conformed to the USDA soil designation of Ewa silty clay loam (EmA). Two bulk sediment samples were collected from Stratum II of T-044 at 0.40–0.56 mbs and 0.53–0.77 mbs. Both samples were wet-screened yielding no significant material. No archaeological cultural resources were identified within T-044.

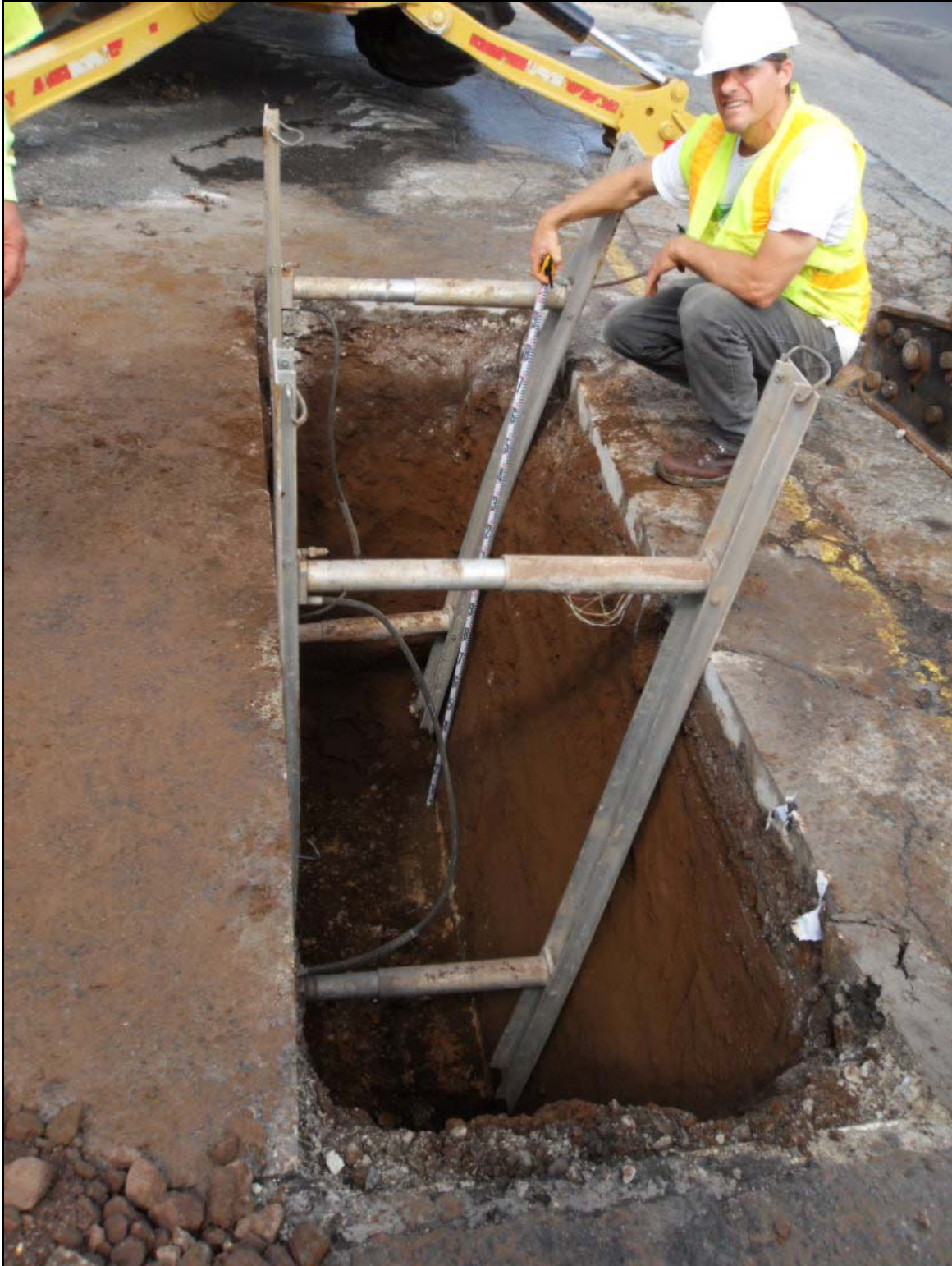


T-044 general location, view to north

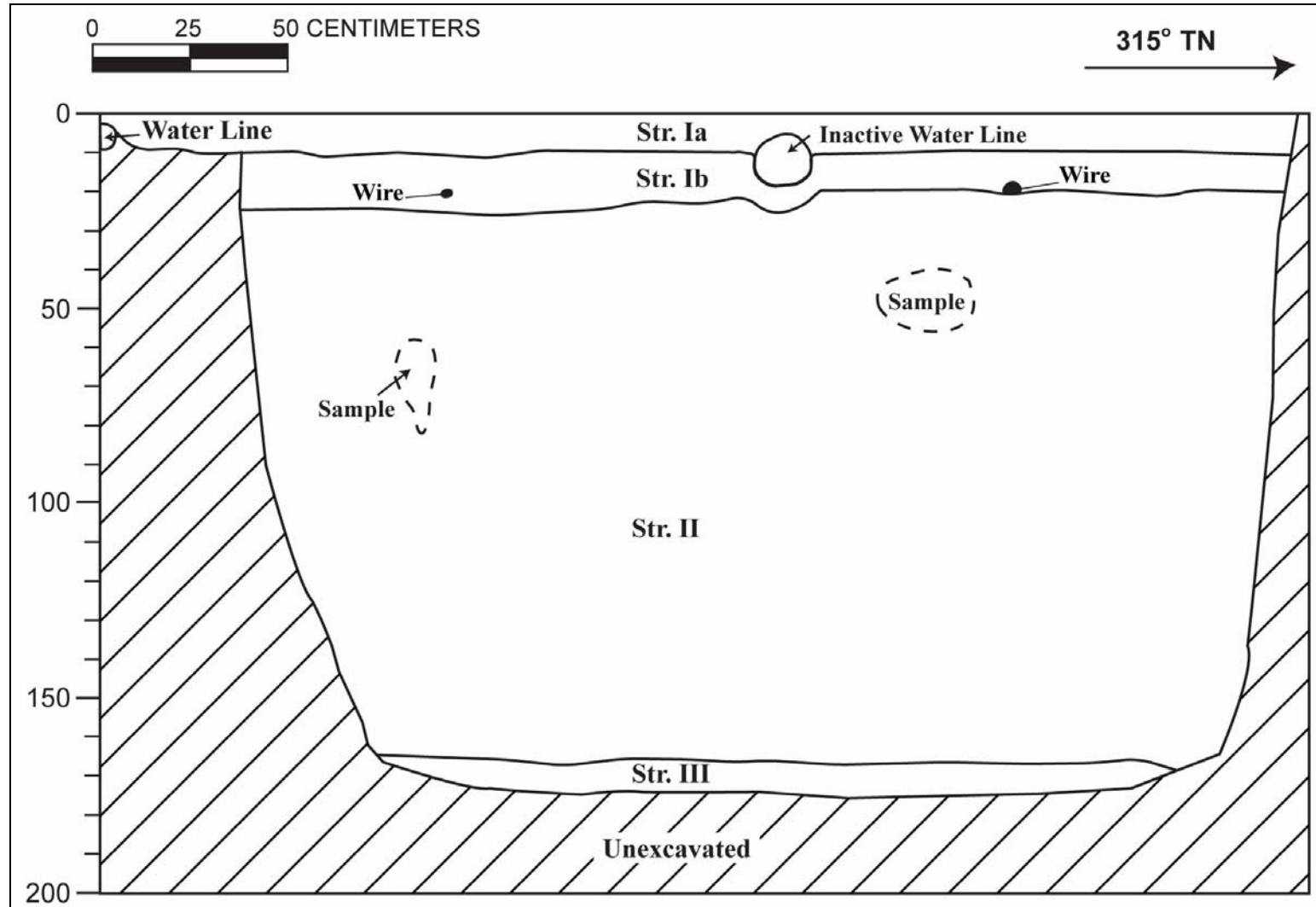


T-044 partially excavated showing southwest wall, view to south





T-044 northeast wall after excavation completed, view to northwest, opposite sidewall from profile wall



T-044 southwest wall profile

## T-044 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Fill; 7.5 YR 5/3 (gray); asphalt
Ib	10–25	Fill; 7.5 YR 4/2 (brown), with common mottles 7.4 YR 5/8 (strong brown) and 2.5 YR 4/8 (red); gravelly sandy clay loam; weak, medium, crumb structure; moist, friable to firm consistency; non-plastic to slightly plastic; clear, smooth lower boundary; gravelly base course
II	25–165	Natural; 7.5 YR 3/4 (dark brown); silty clay loam; weak, fine, crumb structure; moist, friable to firm consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; few, very fine roots; contains possible black root flecking or charcoal; B-horizon; natural alluvium
III	165–175	Natural; coral shelf; structureless, massive; moist, indurated consistency; non-plastic; marine origin; lower boundary not visible; decomposing coral limestone shelf



### 3.31 Test Excavation 45 (T-045)

<b>Ahupua'a:</b>	Kalihi
<b>LCA:</b>	6450:1
<b>TMK #:</b>	1-2-003 [Plat]
<b>Elevation Above Sea Level:</b>	6.3 m
<b>UTM:</b>	616117.31 mE, 2358816.98 mN
<b>Max Length/Width/Depth:</b>	3.05 m / 0.92 m / 0.89 mbs
<b>Orientation:</b>	131 / 311° TN
<b>Targeted Project Component:</b>	Guideway Column
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 45 (T-045) was located in the left turn lane of Dillingham Boulevard between Mokauea and Kalihi Street. T-045 was located on property owned by the City and County of Honolulu. Water and gas lines were present 3.3 m and 5 m northeast and an AT&T and sewer line 6 m southwest and 6 m northwest of T-045.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map depicted T-038 within LCA 6450:1. LCA 6450:1 or the *'ili of Mokauea* (737.76 acres) was awarded to Kaunuohua. There was no description of land use in the award. However, East Kalihi LCA documentation indicated land use consisted of *lo'i*, *kula*, and aquaculture via fishponds. Monsarrat's 1897 showed T-045 was within a rice plantation and 170 m west of a pineapple plantation. By 1919 the plantations were no longer present. As indicated in the 1919, 1933, and 1943 U.S. Army War Department Fire Control maps and in the 1953 U.S. Army Mapping Service topographic map, the region surrounding T-038 underwent heavy development with increased street grids and structures. During the same period T-045 was 271 m northeast of the former OR&L railroad in a heavily developed residential area near the center of Kalihi. The U.S. Army Mapping Service topographic map of 1953 located T-045 135 m west of Kalihi Kai School, and the formal Kalihi and Kapālama area had been developed to its present configuration (1953 U.S. Army Mapping Service map).

No previous archaeology was conducted within the vicinity of T-045.

**Documentation Limitations:** T-045 was excavated to the coral shelf at 0.89 mbs. There were no factors that limited the documentation of T-045.

**Stratigraphic Summary:** T-045 consisted of both fill and natural sediments. The observed stratigraphy consisted of asphalt (Ia), gravel base course (Ib), natural alluvial silty clay loam (II), and the coral shelf (III). The natural surface (II) at 0.30 mbs conformed to the USDA soil designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

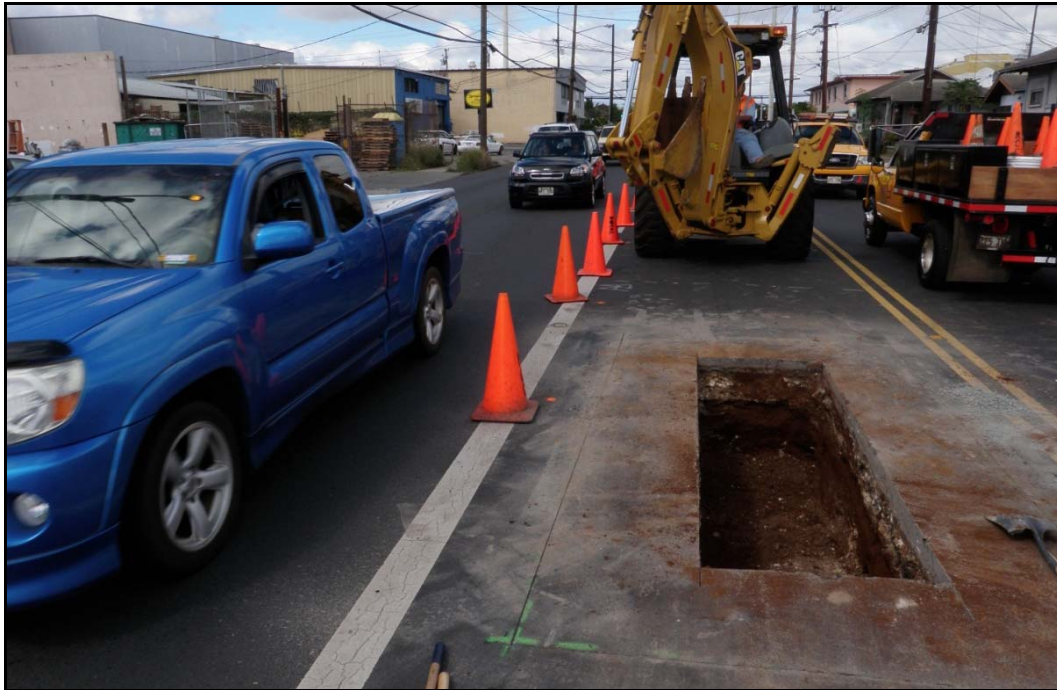
**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** A sample (19 L) from Stratum II was removed from the backhoe bucket and screened onsite in an effort to identify any potential cultural material. No cultural material was identified in the screen.

**GPR Discussion:** A review of amplitude slice maps indicated there were no linear features that might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-045 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.15 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

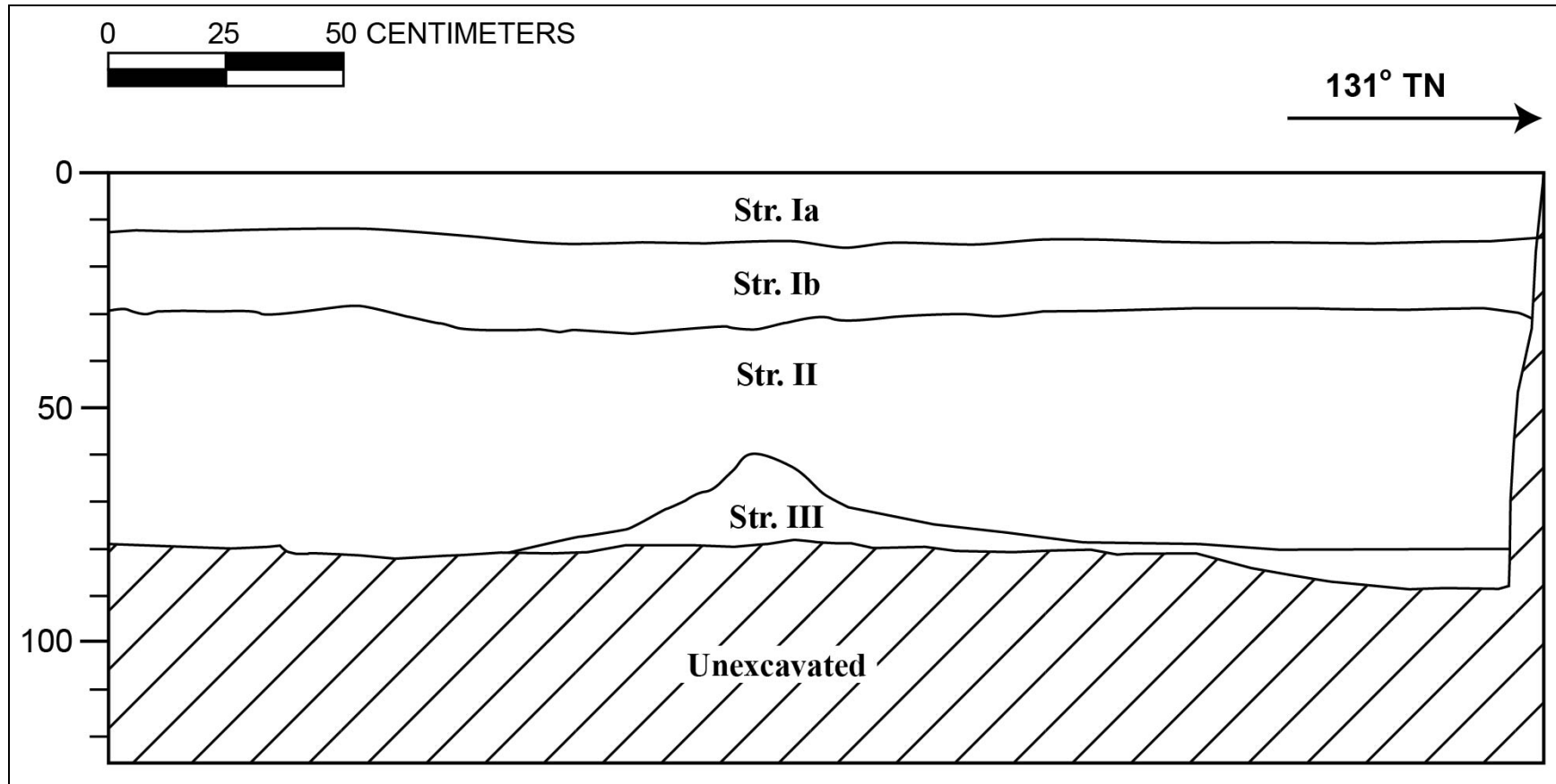
**Summary:** T-045 was excavated to 0.89 mbs to the coral shelf. Stratigraphy included both fill (Ia–Ib) and natural alluvium (II) to the coral shelf (III). Stratum II was natural alluvial sediment encountered at 0.30 mbs and conformed to the USDA soil designation of Ewa silty clay loam (EmA). One 19 L sediment sample from Stratum II was screened onsite in an effort to identify potential cultural material. No significant material was found in the screen. No archaeological cultural resources were identified within T-045.



T-045 general location, view to northwest



T-045 northeast profile wall



T-045 northeast wall profile

## T-045 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt; road surface
Ib	13–33	Fill; 10 YR 5/3 (brown); extremely cobbly loam; structureless, single-grain; dry, slightly hard consistency; non-plastic; mixed origin; very abrupt, smooth lower boundary; crushed coral and basalt base course
II	30–83	Natural, 10 YR 3/3 (dark reddish brown); silty clay loam; moderate, fine, blocky structure; moist, friable consistency; non-plastic; terrigenous; very abrupt, irregular lower boundary; natural sterile silty clay loam alluvium
III	60–89	Natural; 10 YR 8/3 (very pale brown); coral shelf; structureless, massive; moist, firm consistency; non-plastic; marine origin; lower boundary not visible; coral shelf

### 3.32 Test Excavation 46 (T-046)

<b>Ahupua'a:</b>	Kalihi
<b>LCA:</b>	6450:1
<b>TMK #:</b>	1-2-003 [Plat]
<b>Elevation Above Sea Level:</b>	6.11 m
<b>UTM:</b>	616151.31 mE, 2358786.44 mN
<b>Max Length/Width/Depth:</b>	3.05 m / 0.93 m / 0.45 mbs
<b>Orientation:</b>	160 / 340° TN
<b>Targeted Project Component:</b>	Guideway Column
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 46 (T-046) was located within the center turn lane of Dillingham Boulevard, near the Kalihi Street intersection, slightly west (*ewa*) of the Aloha Gas station. T-046 was located on property owned by the City. Utilities nearby included a water line 3.6 m north of T-046 and a sewer line 1.0 m west (*Ewa*) of T-046.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map showed T-046 located within LCA 6450:1. LCA 6450:1 was awarded to Kaunuohua and contained taro *lo'i*. Monsarrat's 1897 map showed T-046 bordering the southern boundary of a rice plantation located 140 m west of a pineapple plantation. By 1919 the plantations were no longer present. T-046 was 290 m northeast of the former OR&L railroad in a heavily developed residential area near the center of Kalihi (U.S. Army War Department Fire Control map 1919, 1933, 1943). By 1953, T-046 was just west of Kalihi Kai School within the formal Kalihi and Kapālama area (U.S. U.S. Army Mapping Service 1953).

No previous archaeology was conducted within the vicinity of T-046.

**Documentation Limitations:** T-046 was excavated to the coral shelf at 0.45 mbs. There were no factors that limited the documentation of T-046.

**Stratigraphic Summary:** The stratigraphy of T-046 consisted of fill strata to the coral shelf. Observed strata included asphalt (Ia), crushed coral fill (Ib), locally procured clay loam fill with basalt gravel, coral, and asphalt inclusions (Ic), and the coral shelf (II). The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

**Sample Results:** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features that would indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and



decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-046 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within the fill deposits. The profile also indicated a change in reflectivity that occurred around 0.2 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

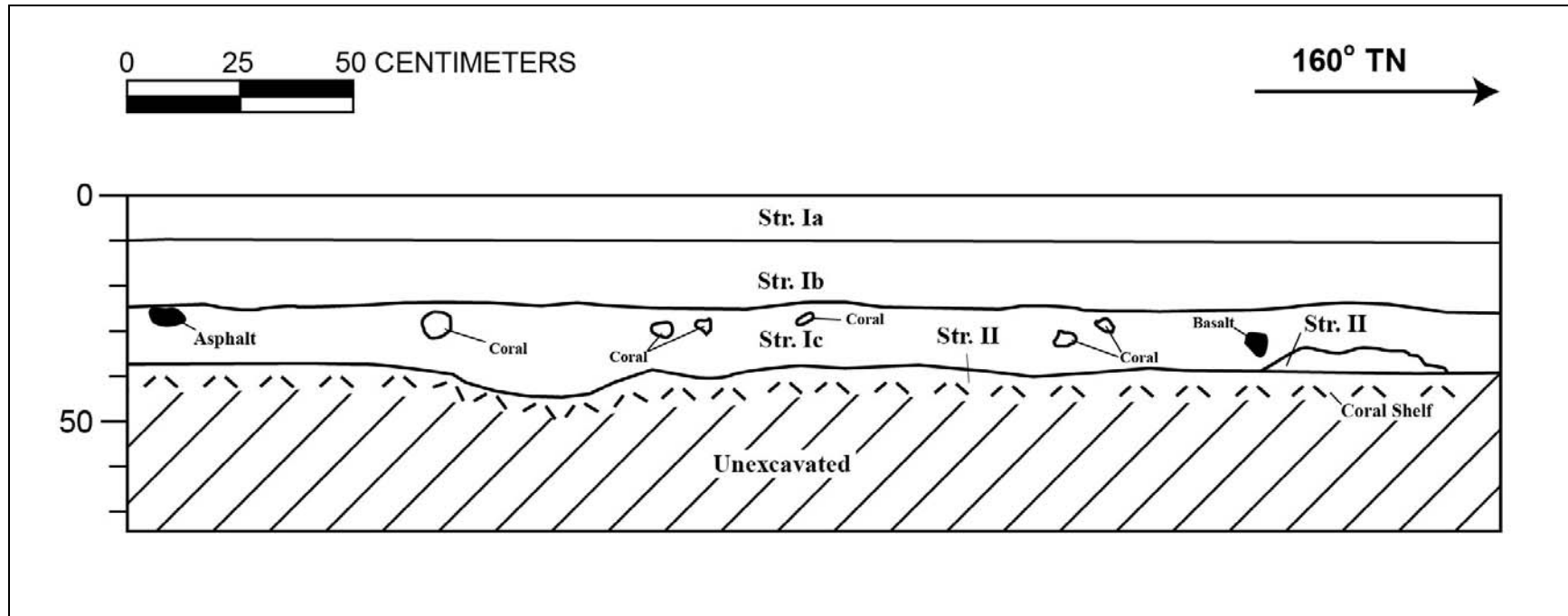
**Summary:** T-046 was excavated to the coral shelf at 0.45 mbs. The stratigraphy of T-046 consisted of fill strata (Ia–Ic) to the base of excavation. Stratum Ic composed of a clay loam with locally procured alluvium that was used as part of the fill and grading material during the construction of Dillingham Boulevard. This does not conform to the USDA Ewa silty clay loam (EmA) soil designation. No archaeological cultural resources were identified within T-046.



T-046 general location, view to south



T-046 northeast profile



T-046 northeast wall profile

## T-046 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt
Ib	10–25	Fill; 10 YR 8/1 (white) extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; crushed coral base course
Ic	25–45	Fill; 7.5 YR 3/3 (dark brown); clay loam; moderate, fine, blocky structure; moist, firm consistency; plastic; terrigenous origin; clear, wavy lower boundary; local alluvium used as grading fill with inclusions of asphalt, coral and basalt gravel
II	35–45	Natural; degrading coral shelf

### 3.33 Test Excavation 47 (T-047)

<b>Ahupua'a:</b>	Kalihi
<b>LCA:</b>	6450:1
<b>TMK #:</b>	1-2-003 [Plat]
<b>Elevation Above Sea Level:</b>	6.0 m
<b>UTM:</b>	616178.70 mE, 2358761.85 mN
<b>Max Length/Width/Depth:</b>	3.03 m / 0.93 m / 0.58 mbs
<b>Orientation:</b>	318 / 138° TN
<b>Targeted Project Component:</b>	Guideway Column
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 47 (T-047) was located within the center turn lane of Dillingham Boulevard, approximately 20 m northeast of the Kalihi Street intersection. T-047 was located on public property owned by the City and County of Honolulu between the Aloha Gas station and the Seafarers International Union building. T-047 was located 4 m south (*makai*) of a water line, 3.2 m north (*mauka*) of an AT&T and sewer line, and 2.8 m west ('Ewa) of a water line.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map showed T-047 located within LCA 6450:1. LCA 6450:1 was awarded to Kaunuohua and contained taro *lo'i*. Monsarrat's 1897 map showed T-047 approximately 20 m south of a rice plantation and 120 m west of a pineapple plantation. By 1919 these plantations were no longer present. T-047 was 295 m northeast of the former OR&L railroad in a heavily developed residential area near the center of Kalihi (U.S. Army War Department Fire Control map 1919, 1933, 1943). By 1953, T-047 was just west of Kalihi Kai School within the formal Kalihi and Kapālama area (U.S. U.S. Army Mapping Service 1953).

No previous archaeology was conducted within the vicinity of T-047.

**Documentation Limitations:** T-047 was excavated to the coral shelf at 0.58 mbs. There were no factors that limited the documentation of T-047.

**Stratigraphic Summary:** The stratigraphy of T-047 consisted of fill strata overlying the coral shelf. Observed strata included asphalt (Ia) and crushed coral base course (Ib) overlying a layer of silty clay containing inclusions of asphalt, basalt and coral cobbles, and brick fragments (Ic) to the coral shelf (II). Stratum Ic was composed of a silty clay with locally procured alluvium that was used as part of the fill and grading material during the construction of Dillingham Boulevard. The stratigraphy did not generally conform to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were collected individually during excavation.

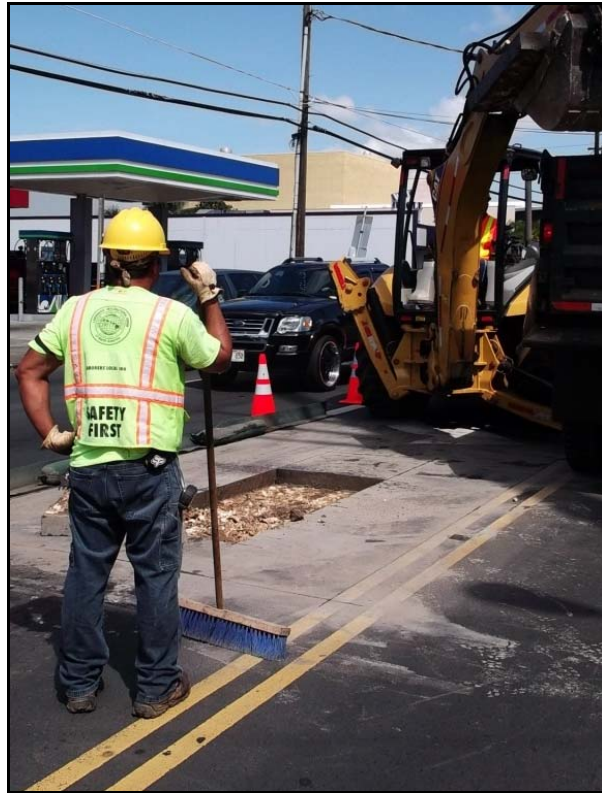
**Sample results:** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated the presence of a linear anomaly. This was a false positive, as no corresponding features were encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-047 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations in density and chemical composition within fill deposits. The profile also indicated a change in reflectivity that occurred around 0.3 mbs. Anomalies were observed in the profile but were not encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

**Summary:** T-047 was excavated to the coral shelf at 0.58 mbs. The stratigraphy of T-047 consisted of fill strata (Ia–Ic) overlying degrading coral shelf (II) to the base of excavation. The stratigraphy generally did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA). The fill layers contained coral, cobbles, bricks and asphalt, and likely correspond to the construction of Dillingham Boulevard. No cultural resources were identified.

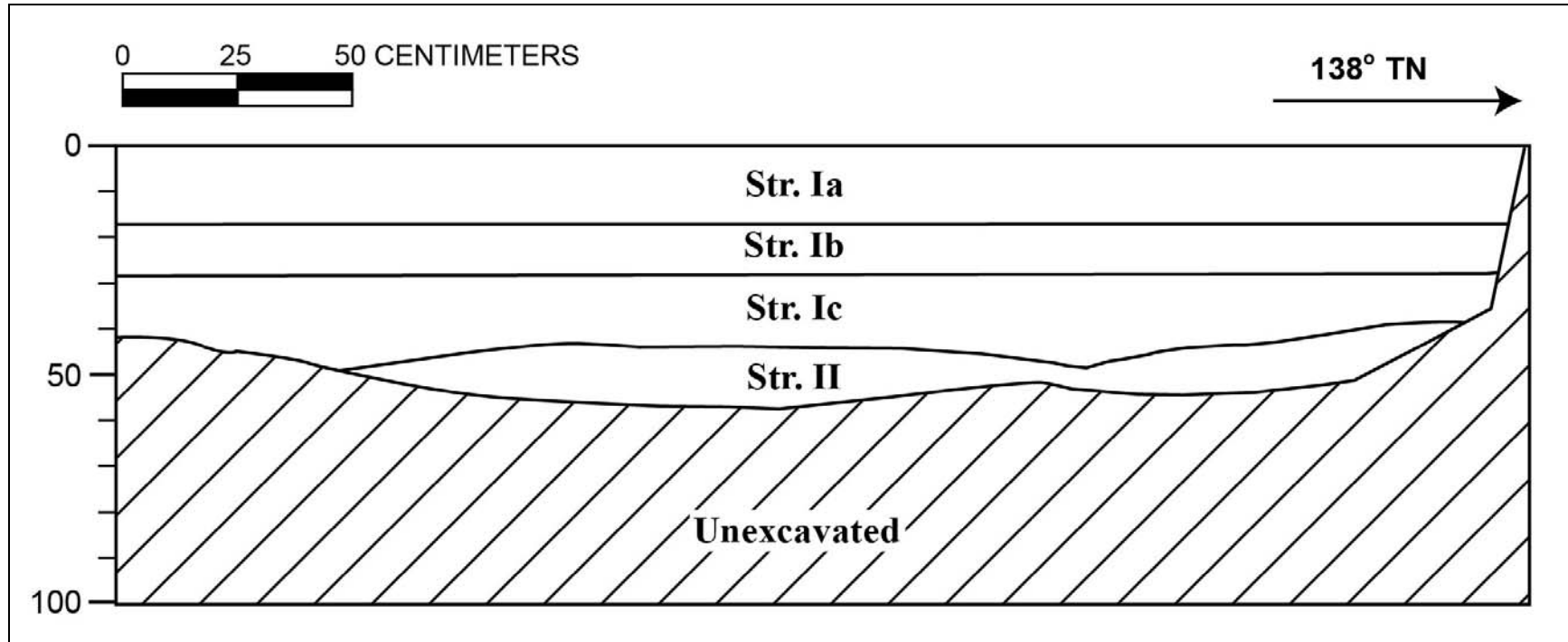




T-047 general location, view to west



T-047 northeast profile wall



T-047 northeast wall profile

## T-047 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–17	Asphalt; road surface
Ib	17–27	Fill; 10 YR 8/2 (very pale brown); extremely gravelly loam; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral base course
Ic	27–48	Fill; 7.5 YR 3/3 (dark brown); cobbly silty clay loam; moderate, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; inclusions of asphalt, coral, and angular basalt cobbles; few red brick fragments.
II	48–58	Natural; degrading coral shelf; massive structure; indurated consistency; non-plastic; marine origin; lower boundary not visible